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VETERINARY MEDICINE

DECEMBER 1937

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A study of the blood group properties of 1000 horses showed that six different genetic factors were involved.

A study of the hoof characteristics of 76 horses listed in six stud books, some of which covered five generations, showed flat feet to be inherited as a simple factor recessive to the normal.

Studies of the number of ribs in buffalo, cattle, sheep, swine, dogs, and horses showed that variations were rarer in the more primitive animals.

A study of twins recorded in the Royal Trakehnan stud book in East Prussia suggests that a single pair of recessive factors is responsible for the production of twins by a mare.

In an attempt to conserve the good qualities of an outstanding sire, no outside blood was introduced to a purebred Shorthorn herd for 20 years. The average relationship of the young herd to the original sire was 42%; the average inbreeding was only 16.9%. This furnishes a demonstration that a moderate-sized herd may follow a close breeding practice with an increase in the uniformity and merit in the resulting herd.

Studies of the inheritance of colors in collies show that three primary factors are concerned; they are "spotting," "black and tan," and a semi-dominant "dilution factor."

A study of the histophysiology of reproduction in the British red fox and in the silver fox, a mutant of the American red fox and now kept extensively in captivity, showed no obvious difference in reproductive processes of the two species.

By artificial insemination of a turkey hen with semen from a Rhode Island red male, and of two other turkey hens with semen from a white Leghorn male, fertile eggs were produced. One embryo died after a few days incubation, another one lived for 22 days during the incubation period. All embryos died before hatching.

Studying the influence of the gonadotropic hormone and oestrin on different stages of the sexual cycle in Romney-Rambouillet ewes it was found that estrum and ovulation could be induced by doses of 100 rat units of gonadotropic hormones given at 17-day intervals. Oestrin induced estrum during anestrum, but when given with the gonadotropic hormone, ovulation was induced without estrum.

Milk samples yielding staphylococci rarely show evidence of mastitis unless accompanied by a leucocyte count of 300,000 or more cells per cubic centimeter.

Observations by W. J. Hamilton, Jr., have shown that apples, buckwheat, various berries, corn, and acorns may profitably be added to the feed of captive ranch-raised raccoons.

Perosis was found by Hammond to be highly correlated with inorganic phosphorus, less correlated with total phosphorus, and negatively correlated with organic phosphorus. It appears that inorganic phosphorus is a primary factor in the etiology of perosis.

Trials with wether sheep on a low phosphorus basal ration but receiving various levels of bonemeal supplement showed that the inorganic phosphorus of the blood is greatly affected by the level of phosphorus intake, the concentration falling to a very low level in animals receiving no phosphorus supplement.

The administration of pregnancy urine in doses from 10cc to 20cc every two or three days to swine four to five months old was found to increase the average daily rate of gain 115 grams per day as compared to the gains of a control group. The treatment caused permanent inhibition of sex activity, and degeneration of the ovaries, but the carcass weight and the amount of fat on the carcass was greater.

Ascertaining the ovulation and the presence of sperm in portions of the reproductive tract at different intervals after mating of 20 Shropshire ewes, it was found that ovulation occurs very late in the heat period, at the time the ewe is passing from heat. The life of the sheep sperm and ova appeared to be less than 24 hours. Sperm reached the infundibulum approximately five hours after copulation. The optimum time for mating the sheep was concluded to be during the last five or six hours of the heat period.

The occurrence of a high temperature in swine in the early stages of posterior paralysis is suggestive of infection.

What drugs and biological products have not been employed in the treatment or for the prevention of equine encephalomyelitis?

In the breeding of goats, it is contended by some breeders, that the mating a buck with his dam gets individuals that are producers of high quality mohair.

The virulence of hog cholera virus is variable. Outbreaks of cholera apparently due to a low grade virus are, in some cases, difficult to recognize. Such outbreaks are causing difficulties for practitioners in some communities. Again, may it be suggested that when in doubt use anti hog-cholera serum and virus.

Studies made of the comparative changes in weight, size of the tail, and blood composition of two fat-tailed sheep during periods without water, without feed, and when feed was supplied, gave evidence that the fat tail serves as a reserve organ to tide the sheep over periods of reduced feed and water supply.

Experiments carried out by Coronel indicate that the immature female mouse is the best laboratory test animal to use in conducting the biological urine pregnancy test in cows. Positive reactions were secured in 71.4% of the animals examined at two months pregnancy. Results obtained at an earlier stage were too variable to be of value.

Two pregnant heifers, each fed a daily dosage of five grams of sodium fluoride, soon showed poor appetite, lost weight, and developed characteristic swellings of the metacarpus and metatarsus. Post-mortem examination showed characteristic lesions of the long bones. This condition is ascribed to fluorine poisoning and is typical of the condition developing in animals receiving raw rock phosphate as a mineral supplement.

Studies of the development of the testes and scrotum of the ram, bull and boar disclosed that spermatozoa first appeared at 147 days of age in the ram, 224 days in the bull, and 147 days in the boar.

Progress against typhoid fever alone would justify all the expenditures for public health in Illinois. This disease has often caused upward of 10,000 cases of illness in a year and been responsible for more than 2,000 deaths. In 1936, there were only 583 cases and 71 deaths in the state; 62 of the 103 counties having no death from typhoid.—*Illinois Health Messenger.*

The Illinois Department of Public Health supplied anti-rabies treatment to 5,746 persons during 1936, at a cost of $42,057.46. Counties in the state paid approximately $200,000 during the year to the owners of farm animals for losses resulting from the bites of rabid dogs or other damage to live stock due to dogs.

The Commissioner of Public Health and Safety of Decatur, Illinois (population 60,000) collected and destroyed 8,600 stray dogs and 3,626 vagrant cats during 1936.

Surgery in the Veterinary Hospital at Tuskegee Institute.

The main object of a clinical examination is to arrive at a correct diagnosis, without which reasonable prognosis or treatment is impossible. At this point, may I sound a word of warning to the younger men. Diagnosis is not the be-all and end-all, for if we cannot apply a suitable treatment for a disease, its correct diagnosis is of little value. I have repeatedly met with young men to whom diagnosis is a mania, yet when they are asked to prescribe an appropriate treatment, they are completely at a loss.—*J. McCunn* in *The Veterinary Record.*

Veterinary Hospital, Tuskegee Institute, Tuskegee, Alabama.

The Veterinary Service of China

VETERINARY education in China is classified into (1) traditional and (2) modern.

1. The traditionalists acquire their meagre knowledge of veterinary medicine through apprenticeship. They number about 5,000. Their distribution is nation wide. Upon them mainly rests the welfare of the live stock industry of China. Owing to their limited and unscientific training, they are ill adapted to bear this enormous responsibility. Horses and cattle, because of their economic importance in rural districts and great use in the army, receive the most medical attention; sheep, goats and swine receive little attention; dogs and cats being given no consideration whatsoever.

2. The modern class of veterinarians are graduates of Chinese or foreign veterinary colleges. Their number is small. The graduates from foreign schools include five from Iowa State College, two from Michigan State College and one from Kansas State College; four from French schools, and a dozen from Japanese schools. Practically all the graduates of foreign schools occupy leading positions in the field of veterinary medicine—prominent practitioners, professors, chief inspectors, bureau heads, etc.

There are three centers of veterinary education in China—(1) Military Veterinary School, (2) Animal Husbandry and Veterinary Medicine of the Central Agricultural College of National Central University, and (3) the Veterinary School at Shanghai.

The Military Veterinary School was inaugurated 33 years ago. Its 500 graduates constitute the entire body of army veterinarians (in peace time) and part of the meat inspection force in public health institutions.

The Department of Animal Husbandry and Veterinary Medicine was organized in 1929. It gives a four-year course in animal husbandry and veterinary medicine combined. Because of political considerations, the school has graduated but a score of students. They are engaged mainly in teaching.

The Veterinary School at Shanghai was opened in 1932 and gives a two-year course in veterinary medicine of collegiate grade. Its graduates number about 50 per year. The objectives of the school are to train young men for meat inspectors and in the control of epizootics.

The live stock industry of China suffers an annual loss of hundreds of millions of dollars from epizootics. It is officially estimated that the services of ten thousand additional graduate veterinarians are needed.

The Epizootic Prevention Service under the Ministry of Industry, was organized in 1932 and carries on, in addition to epizootic prevention, investigation of disease distribution, diagnosis of diseases, research and production of sera and vaccines. Its appropriation for all five projects is $40,000 annually. The loss from poultry diseases alone is 50 million dollars a year!

In addition, there are seven district epizootic preventive services. That of the Taihing district comprises a veterinarian, a clerk and a three-room hospital engaged in swine disease control. Its budget is $2,600 annually. Swine plague is the most costly disease in the district. Hog cholera is less prevalent. The Shanghai district epizootic prevention service is engaged in combatting rinderpest and bovine contagious pleuropneumonia and occasionally, outbreaks of foot-and-mouth disease. By far the largest district organization is that of Kwangsi Province, where $350,000 was spent for a serum laboratory (VETERINARY MEDICINE, Oct. 1937, p. 451).

There are five biological laboratories engaged in the production of sera and vaccines for use in animals. The products produced include: Anti-hog cholera, rinderpest, swine plague (polyvalent), hemorrhagic septicemia (polyvalent)and chicken cholera (polyvalent) sera and swine plague, hemorrhagic septicemia, chicken cholera, staphylococcus, swine contagious pleuropneumonia, rinderpest and hog cholera

bacterins or vaccines. The price of the various sera is about $40 per liter (about 12 times the average cost of anti-hog cholera serum in the U. S. A.).

Veterinary research is rudimentary.

Rabies occurs wherever dogs are found; swine plague and hog cholera are coextensive with swine; rinderpest occurs enzootically each year; anthrax is a serious problem; fowl cholera periodically sweeps the whole country, and 60% of the army horses are infected with glanders.

References

Inspection and Commerce, 7:10, pp. 9-13.
Veterinary Medicine, 29:8, pp. 326-28.

Veterinary Education in Japan

Two of the five imperial universities of Japan have veterinary faculties—those at Tokyo and at Hokkaido.[1] Students attend a three-year course, each year being divided into two terms. The degree conferred is Bachelor of Agriculture (Veterinary). There are also a few private veterinary schools with a similar curriculum, at which the students are trained, entirely in Japanese, whilst at the universities, European textbooks are also used.

Veterinary Medicine in Turkey

A short report is given of Jezic's visit to Turkey,[2] with special reference to the present veterinary position in that country. The veterinary organization is both modern and satisfactory. The Veterinary Head Office is a department of the Ministry of Agriculture. It is divided into sections governing all branches of veterinary functions. Turkey possesses modern legislation for animal contagious diseases control. The principal animal diseases, which at present need careful attention, are: rinderpest (eradicated since 1933), anthrax, foot-and-mouth disease, sheep pox, glanders, rabies, fowl cholera and distomasis.

Particular attention is drawn to veterinary education. There is a new veterinary college at Ankara. There is one modern veterinary laboratory at Pendik, Stamboul, and another, a large one, at Etlik, in addition to three smaller ones at Erzindjan, Smyrna and at Mersin. The number of verterinarians is about 400.

[1] Nagakura, Y., and A. C. Aggarwala, 1936. Veterinary Education in Japan; *Indian Vet. Jour.*, 13, pp. 144-47. Abst. in *The Veterinary Bulletin*, 7:9-450.

[2] Jezic, J., 1936. Veterinary Medicine in Turkey; *Jugoslov. vet. Glasn.*, 16, pp. 67-77. Abst. in *The Veterinary Bulletin*, 7:9-450.

The Status of the Veterinary Profession in Germany

Great satisfaction is felt by the veterinary profession in Germany in the establishment, on April 20 (the birthday of the Fuhrer), of an independent veterinary division (Veterinar Abteilung) in the National Ministry of the Interior. This is a great advance, for the profession has now direct contact with the government, and occupies a position equal to that of medicine and agriculture.

Dr. F. Weber has been appointed Ministerial Director and guide of the division (Ministerial Direktor and Reichstierartzfuhrer).

In 1900 German veterinarians had no representation in the ministry. Since 1910 there have been veterinary under-divisions in the various states, Prussia, Bavaria, Saxony, etc., which were subservient to medicine or agriculture.

There are about 5,000 veterinarians in the country.

Amongst the new provisions to be introduced by the Ministerial Director are the following: That the veterinarian now has a definite responsibility to the Reich for the health of the animals under his care; that he shall attend a short refresher course, at least every two years, to make himself familiar with advances in veterinary science; that the director of all municipal abattoirs in towns of more than 3,000 population shall be a veterinarian; that no unqualified person shall practice as a bovine obstetrician, nor may an unqualified person treat contagious abortion in cattle.

There are five veterinary colleges in Germany: The Veterinary High School in Hanover; Faculties of veterinary medicine in the Universities of Berlin, Leipsic, Giessen and Munich. These, however, are under the control of the National Ministry of Education, and not of the Ministry of the Interior.—*Vet. Rec.*, 49:19, 1937.

Animal Victims of the Ohio-Mississippi Flood of 1937

The million and a half persons in the valleys of the Ohio and Mississippi Rivers and their tributary streams who were affected by last winter's unprecedented floods were not the only victims of this disaster, which also claimed the lives of thousands of animals—dogs, cats, horses, cows, hogs and chickens.

While the work of the Red Cross was primarily that of providing shelter, food, clothing and medical and nursing care for the homeless families of the flood, its workers found the time and strength in those hectic days to rescue and feed thousands of abandoned animals. At numerous points corrals were hastily set up to keep the rescued animals from straying and wire fencing and rude shelters were erected outside of many of the refugee centers to temporarily house the pets refugees brought with them and also those which were subsequently rescued from abandoned homes. In larger cities and towns, where animal welfare societies existed, unidentified rescued pets were turned over to them by the Red Cross, but in many small towns and rural places the care of the animals became a Red Cross responsibility.

Inundated Ohio River towns were reported to have lost as many as a tenth of their dog population during the high water. Most deaths were attributed to exposure, hunger and drowning. Many were said to have been killed by automobiles as they ran confused through the street.

At Evansville, Indiana, where a fourth of the families were driven from their homes by the waters of the Ohio, approximately 1,000 dogs perished, it was estimated by Dr. Walter H. Gruner, dog Rescue Supervisor. He approximated the city's dog population to be 10,000.

The Red Cross turned over to the municipal dog pound hundreds of unidentified dogs during the two weeks of highwater. Those claimed by the homeless were quartered in emergency kennels set up adjacent to concentration centers. Here they were fed and visited daily by their owners who ate and slept nearby.

At the Helm – in time of need

The first Red Cross dog kennel was established at a refugee center situated in an immense assembly building of the Chrysler Motor Corporation. The move was necessitated when refugees arrived with dogs being led with makeshift rope leashes.

Most dogs in the path of the waters were lost in the hysteria born overnight when the Ohio was transformed from a sluggish, peacefully flowing river into a rampaging torrent. Families, themselves, found difficulty in escaping the waters. Reports from towns along the flood front told pitiful tales of women and children pleading for rescue from second stories of dwellings; or daring rescues from homes collapsing due to the pressure of water; of sections where in many instances roof-tops were covered; of children hungry and cold; of energy-taxing days faced by relief agencies fighting to save lives with the Red Cross. Amidst this terrifying horror, tales were told of animals, fraught with a danger they did not understand.

Household pets were not the only animals among which the flood waters spread death and destruction. Distressing accounts of live stock losses were intensified as the flood crest was reached. Northern Kentucky suffered perhaps most seriously. Lowlands over which the water spread offered no escape. A rescue worker returning by boat to Red Cross regional headquarters situated at Evansville, told of seeing trees with bark gnawed to height of six feet. He described the discovery of cows and horses standing in freezing water three and four feet deep. Herds of twenty and thirty cattle were found drowned along the bottoms skirting the river. In effort to alleviate the exigency, ferry boats, Coast Guard boats and hundreds of private craft were dispatched by the Red Cross to the stricken areas with orders to pick up live stock and poultry. In one instance, a ferry boat loaded with nearly two score horses and cows capsized in the rushing current, drowning the entire cargo. The boat had been anchored during a heavy fog which hung over the river. Farmers in many instances saved live stock by bringing them into their homes, turning the living rooms into stables.

The Red Cross is kept ready to help in disasters and all of its service programs are supported by the membership dues of those who join during the Roll Call, held from Armistice Day to Thanksgiving.

Posterior Paralysis in Swine

Posterior paralysis in swine is of rather frequent occurrence. This malady has generally been attributed to a deficiency or unbalance of calcium and phosphorous or an insufficiency of essential vitamins. Thus numerous practitioners have reported the control and usually relief of posterior paralysis cases by the balance of calcium and phosphorous in the diet, conjoined with the necessary vitamines.

Doyle of Purdue, has called attention to the fact that there is evidence that in addition to deficiency and unbalanced ration, there is an infectious type of porcine posterior paralysis.

In July, posterior paralysis was noted by the writer on some three or four premises on adjacent farms in Northeast Missouri, the diet provided, although chemical examination was not made, should have contained ample minerals and vitamins. Swine of all ages were affected and it was noted there was a high temperature in the beginning. The affected individuals ceased eating and suffered rapid shrinkage and emaciation. Posterior paralysis was marked. Most of the affected animals went down. Several were apparently recovering without treatment. Whether or not this malady was infectious, has not been determined. It will be of interest to have reports of other cases from practitioners for the readers of VETERINARY MEDICINE.—*A. T. K.*

The Sow, an Emblem of Fertility

Marechi, the national guardian deity of Tibet, celebrated throughout Tibet, Mongolia and China, is a creation of India where she was the personification of light, the goddess of dawn, the offspring of Brahma, and mother of the sun god. The Chinese still call her the "Queen of Heaven."

In Tibet she underwent some transformation and is regarded now as being able to incarnate herself in the form of a sow, an ancient emblem of fertility. She is represented as enthroned on a chariot drawn by a sow surrounded by eight little pigs. She has three faces, two of which are human, and one is the face of a hog.

This goddess is worshipped in a special temple on Yamdok Lake, ruled by an abbess who is believed to be an incarnation of Marichi, and who, according to tradition, has behind her ear an excrescense resembling a sow's head.

The story goes that some 200 years ago a Mongol prince attacked her monastery, shouting insulting challenges to the abbess to come forth and show her sow's head. When the Mongols had destroyed the walls and marched into the courtyard, they were amazed to encounter merely a herd of pigs led by a sow. The prince at once halted the pillage, and the pigs became transformed into monks and nuns, the largest sow into the abbess herself. The Mongol prince, converted by this miracle, enriched the monastery with a generous endowment.

Studies of Heredity in the Dog*

By W. M. DAWSON,
Washington, D. C.

Dogs supplement the brains of men. Their usefulness depends almost entirely on intelligence and temperament. No other animal serves so many purposes: they are hunters, guards, companions, guides, messengers, herders, detectives, haulers and carriers, scavengers, and even, in parts of the world, sources of fur and food. It is surprising, then, that so little has been done in the way of systematic research in the genetics of the dog, in spite of the fact that in other fields—physiology, psychology, medicine—work with dogs has helped to make possible some major scientific advances of great benefit to humanity.

Scattered studies have furnished information on the inheritance of coat colors, which apparently depend on many genes, often with multiple effects. Certain characteristics of form and structure have also been studied, including the inheritance of modified secretion of the endocrine glands, which has been under investigation by Stockard at the Cornell University Medical College. Some work has been done on the inheritance of aptitudes, notably at Fortunate Fields, in Switzerland, where German Shepherd dogs have been trained as guides for the blind and for army and police service. Here marked progress has been made in breeding superior animals by assuming that valuable characteristics were controlled by a few major genes.

In practical breeding, dog competitions of various kinds have had a marked influence, since persistent winners at field trials and dog shows have a favored position as breeding stock. On the whole, this has probably been a good influence in dog breeding, though from the standpoint of sound scientific practice undue weight is given to the appearance or performance of the individual animal. Awarding prizes and selecting breeders on the basis of a genuine progeny test would put dog breeding on a sounder genetic foundation.

In some cases these contests have been responsible for splitting a breed in two different directions, one strain being especially adapted to perform well in the field, the other being notable for show points. The field competitions — greyhound racing, dog-sled racing, hunting and retrieving contests, obedience trials—are of interest as indicating certain kinds of measurements that would have to be developed in a program of genetic research so that one dog might be accurately compared with another.

What are the possibilities in genetic research for the future? There is little doubt that it would help to accomplish improvements in dogs themselves, especially in the development of types for special purposes. Beyond this, however, is the fact that dogs are probably better suited than any other animal for investigations in the inheritance of psychological traits. These traits are important in many farm animals; nothing is known about their behavior in heredity. The Department of Agriculture has recently made a modest beginning in an investigation of this sort, using the Puli dog —a sheep dog of Hungary—which is being crossed with various other breeds. From these experiments it is hoped that worthwhile information may be developed regarding the inheritance of intelligence and certain aptitudes of practical value in dogs, the influence of temperament in such problems as effective feed utilization and the possibilities for similar investigations with other farm animals.

*Summary of an article in the 1937 Yearbook of the United States Department of Agriculture.

The Detroit City Dog Pound

By ROBERT F. WILLSON,
Detroit, Michigan.

During a recent rabies epizootic in Detroit the Detroit City Dog Pound came into quite some prominence. The writer thinks that veterinarians in other cities may be interested in the dog pound here in Detroit and how it is managed.

Detroit has been licensing dogs since 1880, and at that time the first pound was established. Two men were employed; one being stationed at the pound, and the other out in the town with a horse and wagon picking up stray dogs. The early pound was a small building, capable of housing about 150 dogs. There were no cages for rabies observation, all dogs were held in one large pen. The unclaimed dogs were destroyed by drowning in the Detroit River.

During the following 40 years the pound was moved to larger quarters, and a few more men were added to the staff of dog-catchers. In June, 1921, there were eight men employed at the pound and two dog wagons, working in the city. The pound then had 128 cages for rabies observation and six large pick-up cages. No veterinarian was at the pound, but an arrangement was made with the eight practicing veterinarians in Detroit, whereby each would visit the pound one day each week to vaccinate out-going dogs, diagnose rabies, and treat emergency cases.

This arrangement was agreeable to all concerned, but as the number of dogs in Detroit increased, the veterinarians found it difficult to leave their hospitals for a sufficient period, due to increase in their practices. At this point the Detroit Board of Health agreed to place one of their veterinarians at the pound permanently. This procedure has been adhered to since 1921.

At present the pound occupies approximately one-half a city block; 32 men are employed at the pound and there are in addition eight modern dog wagons, with their crews, covering the city.

Dog Wagons

Our present dog wagons have a capacity of approximately forty medium-sized dogs. These wagons are manned by auxilliary policemen of the Detroit Police Department. The men are divided into three working shifts running continuously from nine o'clock in the morning to nine at night. Each wagon has two nets 42 inches in diameter, which are used in catching dogs that are afraid of a rope.

Observation Cages

We have 128 cages for large dogs, and 428 cages for small dogs. These cages are modern in every respect, and are built so that they may be cleaned thoroughly, and quickly. The cages for the large dogs are made of metal and for the small dogs of tile. All have cement floors. The floors are warmed artificially in the winter time by warm air circulating in spaces underneath.

Rabies Room

The cages in the rabies room are of the same type as in the observation rooms, and the room is always locked. None of the public is allowed in this room. Of course, no dog is ever released from this room.

Sick Room

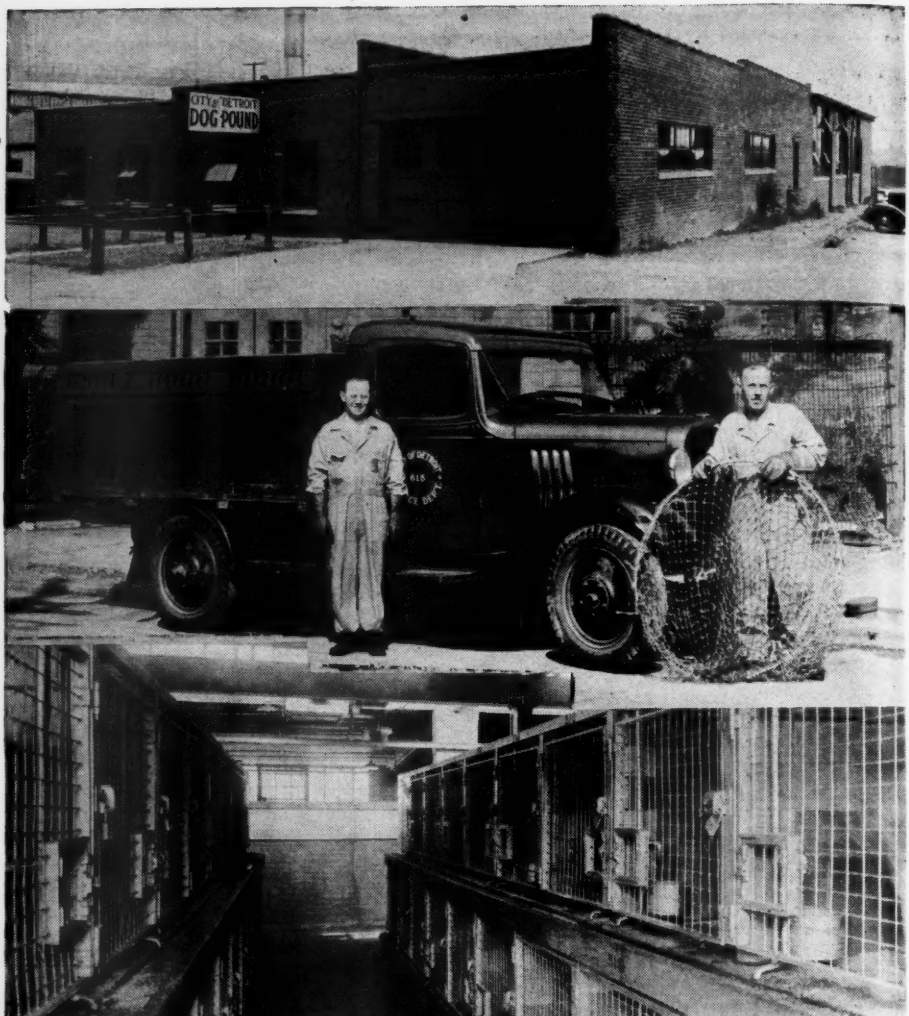
No dogs are treated at the pound. If all is not going well with a dog the owner is informed, and in many cases his private veterinarian is called and he either takes the dog to his hospital, or comes to the pound daily to treat the dog. The sick room at the pound is merely a place to segregate sick dogs.

Pick-up Room

Our pick-up room is 60 x 80 feet. It contains four large pick-up cages on each side, one side for the males, the other for females. In the center there are two large sales cages. At the present time the Detroit area is quarantined on account of rabies, and the pound is not selling dogs.

Picked up Dogs

In Detroit, any dog found on the street without a leash is picked up by the dog wagon; taken to the pound, and if it has



DETROIT DOG POUND

Top: Exterior view. Center: One of eight trucks for collecting strays, with two members of the crew. Bottom: Row of cages in the ten-day room. Note individual watering cups and small doors for feeding.

a valid license tag, the owner is notified by mail. The dog is kept for three days; if not claimed in that time, it is destroyed. However, when there is no quarantine on, the dog is sold. If there are two persons who desire the same dog, it is sold to the highest bidder.

Ten-day Dogs

When a person is bitten by a dog, or other animal capable of transmitting rabies, a report is made to the board of health, or to the police department. The pound is immediately notified, and a wagon is dispatched to the dog's home. There the officer explains to the owner what has happened, informing him that dog must be taken to a recognized veterinarian, or to the pound. When the dog is taken to a veterinarian, he informs the pound that he has the dog and becomes responsible for holding it for observation. If the owner elects to have the dog taken to the pound, it is placed in a numbered cage, recorded, and placed under observation of the veterinarian in charge. The observation period is ten days. When the dog is released it is licensed, and vaccinated.

It would take much space to give the records of the pound for recent years. In 1935 dogs released to the owners numbered 8,185; dogs sold numbered 4,231, and 16,010 were destroyed as strays and unclaimed dogs. This is considered as a representative year by the officials of the pound. It illustrates the scope of pound activities.

The dog pound is under the supervision of the Detroit Police Department. The veterinarian in charge is the only person at the pound representing the Detroit Board of Health. The welfare of the dogs is under the supervision of the veterinarian. If a dog in the pound for observation, or in a private veterinary hospital under observation, shows symptoms of rabies, the person bitten is immediately notified by the Board of Health, and advised to begin the Pasteur treatment on the diagnosis of the veterinarian. After the dog dies, the head is sent to the Herman Keifer Hospital in Detroit for an examination of the brain. The patient's physician is notified of the findings of the technician at the hospital.

Cooperation with Detroit Veterinarians

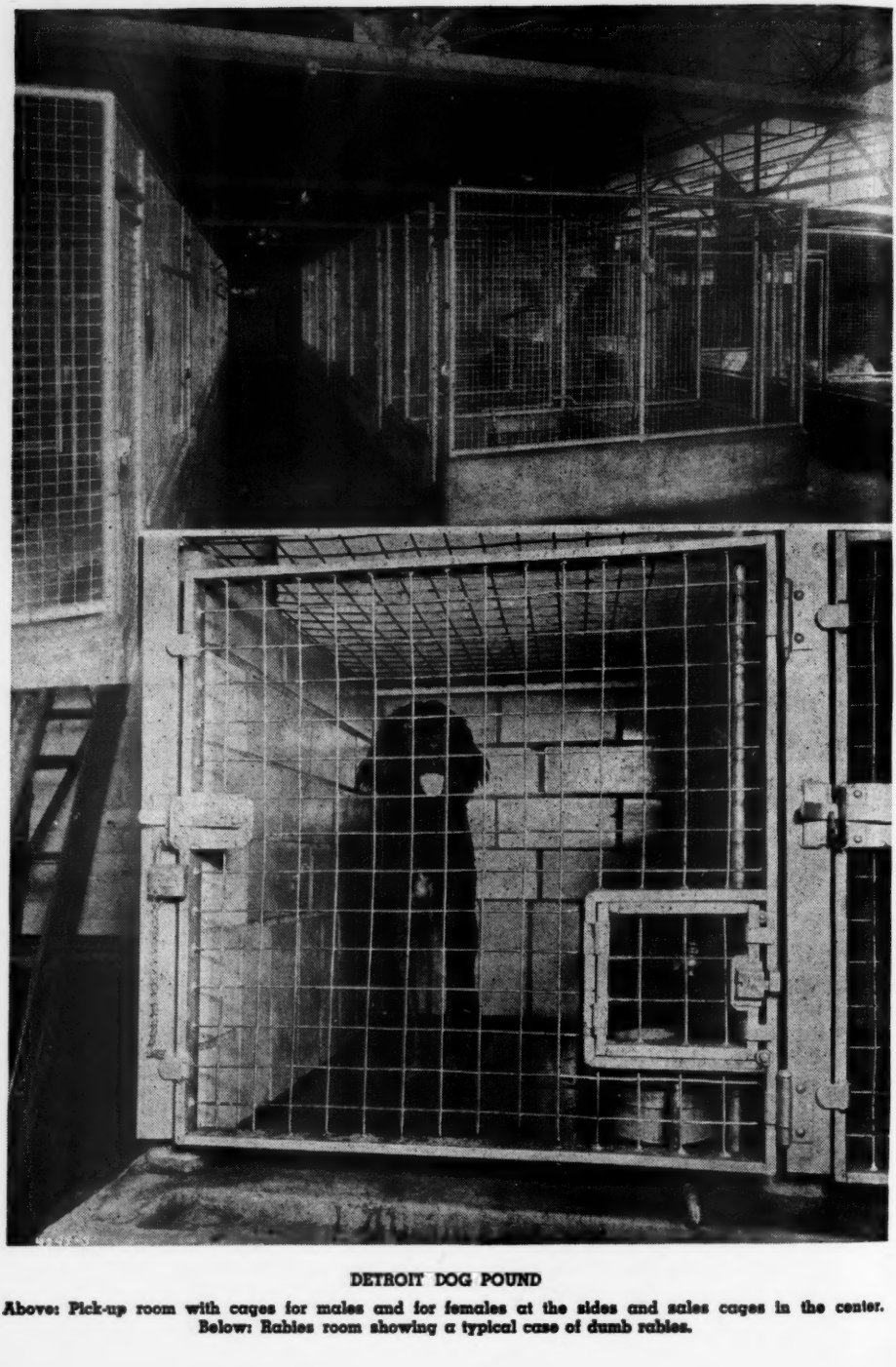
It is the policy of the pound to cooperate in every way with the practicing veterinarians in Detroit. The dog catchers, when calling for a ten-day dog, always inform the owner that he has the privilege of taking the dog to a veterinarian. The board of health investigators also inform the dog owner of this fact.

As mentioned previously, no dogs are treated at the pound. When an owner takes a dog home that is not up to par, he is always advised to take the dog to his veterinarian. We maintain a list of Detroit veterinarians at the pound with their addresses and phone numbers. When anyone comes to the pound with a question concerning veterinary work, they are always referred to this list which is placed in a prominent place in the lobby of the pound.

Advantages of the Pound

In my opinion the biggest advantage of the pound is that it keeps down the number of stray dogs. As a result of this the many organizations against dogs have much less to protest about. Just recently a notice appeared in a Detroit newspaper concerning a society in New York city which favors removing all dogs from that metropolis. Although this seems fantastic at the present time, it is possible that such an organization may recruit many members. If stray, unowned or unwanted dogs were taken off the street the supposed dog nuisance would be stopped, and those who dislike dogs would have nothing serious about which to protest.

Another advantage of the pound is that many dogs, after biting some person, are placed under observation here, that without a pound would never be placed under surveillance. At least 90% of the dogs at the pound belong to persons who (1) cannot afford to have the dog placed in a veterinary hospital or (2) people who would refuse to turn their dogs over to a veterinarian. One can easily understand what might happen if a person were bit-



DETROIT DOG POUND

Above: Pick-up room with cages for males and for females at the sides and sales cages in the center. Below: Rabies room showing a typical case of dumb rabies.

ten by a rabid dog, and that dog was not confined to a hospital or a pound, and a diagnosis of rabies made. If the dog were owned by any of the many persons who do not believe in veterinary hospitals, or who could not afford to have a dog hospitalized, the person bitten probably would not have the protection the Pasteur treatment affords.

The pound serves another purpose by picking up strays in that it stops the dogs from running in packs, thus retarding the spread of rabies.

The pound also makes the owners "dog conscious." By this I mean it convinces people that the city is serious about the dog situation, and that owning a dog entails certain definite responsibilities.

The lay personnel of the pound, of course, consider the humanitarian point-of-view. This embraces, however, the protection of the public.

Conclusion

As a veterinarian I believe that dog pounds are necessary for the incarceration of stray dogs to aid in the control of rabies. Observation of dogs belonging to indigent persons, and persons who refuse to have their dogs placed in a veterinary hospital furthers the control of this disease. Also I believe that the efforts of perennial crusaders against the dog are rendered abortive, chiefly to the extent that stray dogs are kept off the streets.

I will gladly answer any questions concerning the routine of the Detroit Dog Pound. It may be of interest to note that the charge for a female dog license in Detroit is $2.10—for a male $1.10.

* * * *

The fact that trichinosis is common in the United States is not a reason for not eating pork, but is a reason for cooking it well.

* * * *

Frequent removal of chicken manure from poultry yards and prevention of fowls from eating beetles, grasshoppers, and sandhoppers are the basis of control measures for the gizzard worm.—*E. S. R.*

Five Hundred Cases of Scarlet Fever Due to Raw Milk

A recent epidemic of approximately 500 cases of scarlet fever in Owego, Tioga County, N. Y., has been traced to the use of raw milk from an infected cow, according to a statement issued by the state department of health. The source of the outbreak was suspected early in the epidemic, and the sale of raw milk from the dairy concerned was stopped. This action was followed by a rapid decline in the number of cases. As the result of this outbreak of scarlet fever, and the determination of its cause, the town of Owego has passed an ordinance requiring the pasteurization of all milk sold there.—*Public Health Reports* 1-27-37.

* * * *

Management of Dystocia in the Dog

The first thing to do in a case of dystocia is to consider the general condition of the bitch. Any rise in temperature is ominous of a toxic state arising from the uterus, and means that unless delivery can be effected by the genital passage, hope of saving the life of the bitch is very slender. If the temperature is normal and no previous vaginal examination has been made, the greatest care must be taken to protect the uterus from infection in carrying out manipulation, so that if we fail to empty it we can resort to abdominal section with a reasonable hope of a successful termination.

The handling of a case of dystocia is a surgical operation and the same care should be taken to prevent infection of the normally sterile uterus by pathogenic organisms as would be taken in carrying out an operation elsewhere in the body. Every digital examination *per vaginam*, even with the greatest possible regard for surgical cleanliness, is fraught with some degree of danger of infecting the uterine cavity. The risks are not very great when it is possible to effect delivery by the genital passage, but until a vaginal examination is made, we cannot usually tell whether we are likely to succeed in this way or not.—*W. McG. Mitchell* in *The Veterinary Record.*

Sarcoptic Mange In a Wild Red Fox

By E. K. LeDUNE, Albany, New York,
Wild Life Pathologist, New York State Conservation Department

AMONG the resources of the nation, the game animals demand and deserve our attention. With the continual encroachment of agriculture and farming upon the last refuge of our game, it becomes the office of the individual states to give protection to them, in order to retain a certain equilibrium in nature. Game management, therefore, plays a definite rôle in maintaining a hunting preserve.

It is true that the red fox is not of economical importance in the same sense as the red deer. As a matter of fact, the fox is known as a predatory animal; nevertheless, he has a certain place in the scheme of nature. Since the fox is particularly fond of mice, rats and other rodents, and since he consumes also great quantities of grasshoppers and other injurious insects, his value to agriculture cannot be denied. Moreover, his pelt is a lucrative source of revenue to the trapper. The red fox is a close relative of the silver fox; zoologically he is a member of the dog family. Obviously, diseases that attack the wild fox must naturally be of interest to the veterinary profession.

An interesting fox specimen was sent to the laboratory of the New York State Conservation Department by Mr. E. T. Townsend, state game protector. He stated that several foxes had been found in this condition in his territory within the last few years. This particular specimen was an adult, male, red fox, weighing approximately six pounds. The animal was in poor flesh; its hair-coat was dry, glossless, and possessed a certain deadness to the touch. The hairs over various portions of the body were matted into rolls, some as long as the length of an arm. The hairs on the tail were coated with scales of epidermis. A peculiar, characteristically moldy odor emanated from the body of the animal. The skin on the ventral surface of the body was rough and cracked; in some places a bloody exudate was seen oozing from these breaks in the skin. The ears were twice or thrice normal size and thickness; practically all the hairs had fallen out. Eyelids, mouth, front legs and paws presented a similar appearance. In short, the fox was a sight, once encountered, one could never forget.

A few skin scrapings were made with a curette over different portions of the body, and examined microscopically, revealed thousands of small turtle-shaped parasites (mange mites). They were identified as *Sarcoptes scabiei,* var. *canis,* the common-mange of the dog. This mite has been found also on silver foxes, wolves, coyotes, martens, mink, and ferrets. So far as known mange mites are transmissible by direct contact and by indirect contact if the parasite has been off the host for not to exceed eight days. These small mites burrow under the skin where they excavate galleries, in which they mate and the eggs are laid. The eggs hatch in four to six days. The young reach maturity and the females begin to lay eggs in 10 to 14 days. Reproduction is rapid and the mites soon spread to practically all portions of the body.

The disease is always associated with intense pruritus. The skin becomes reddened and inflamed, and as it progresses, the skin takes on the appearance of an elephant's hide. The animal becomes weak and worn out from constant scratching and digging at the unseen foe. Where the hairs are falling out, a yellowish bloody serum oozes from the denuded area. Various types of microorganisms often enter the abraded skin as secondary invaders, complicating the disesae picture and hastening the fatal end.

Generally, upon autopsy, large quantities of hair are found in the digestive tract; this held true in the case under observation. The hairs are swallowed during the act of gnawing and biting the itching parts. Sarcoptic mange is always fatal, unless

medical treatment is applied which, of course, is impossible in the wild fox.

Presumably this fox acquired the mites from a dog or from other foxes. Possibly a dog with mange may have chased it and when the fox "holed up" the dog attempted to dig it out, and in so doing scraped some of the mange mites off its body. When the fox eventually came out of the hole the opportunity for indirect contact in the narrow opening occurred. Undoubtedly, the fox had a chance to pass the parasites by direct or indirect contact to many other foxes and fox dens in the vicinity.

Olt-Stroese (Die Wildkrankheiten und ihre Bekämpfung) state that the hyperkeratosis of the skin and the scab formation are caused by the toxic action of the mite's saliva. This toxic saliva produces an inflammation which stimulates the growth of the epidermis. The fluid products of the inflammation penetrate the horny substances of the skin, and on drying up paste them together in such a manner that the excess production of epidermis can not be cast off in the form of scales, as in the case of the normal skin. Due to the movement of the skin, especially during rubbing and scratching, cracks appear, involving the epidermal stratum beneath, causing erosion and secondary complications.

According to these latter authors, the spread of mange is facilitated greatly during the rutting season when foxes congregate in bands and come in intimate contact with each other. They recommend the extermination of the mangy foxes for humane reasons, and as a matter of sportsmanship. The fox dens are to be made uninhabitable for the critical period of possible transmission by pouring strong smelling disinfectants, such as crude cresol into them, in order to prevent infection of foxes immigrating from other sections.

Veterinary Achievement

The eradication of bovine tuberculosis from 46 of the 48 states is the greatest veterinary achievement in the history of mankind, if not the most tremendous victory ever recorded by science over disease.—*Sam Guard.*

Individual Treatment versus Mass Treatment

The term "treatment" usually implies that the cause of some disease or infection is definitely known to be present in the individual at the time when the drugs or other remedies are administered. Diagnosis being an essential preliminary, it does not alter the principle whether only one individual or a group of a thousand persons at a time is being treated.

The expression "mass treatment," however, brings quite a different conception into medical practice. By mass treatment most people understand the administration, to a group of persons, of remedies appropriate for the treatment of some particular disease or infection, but without the specific diagnosis having been made in each case. Some, or it may be many, of the individuals of the group have not been proved to be, and quite probably are not, in fact, sufferers from the disease or infection for which the remedies are being applied. To illustrate the matter in an extreme way: if 100 people, in each of whom ancylostomiasis has been correctly diagnosed, are given a suitable curative dose of carbon tetrachloride, that is treatment; if, on the other hand, 100 people are given a similar dose of carbon tetrachloride, when a diagnosis of ancylostomiasis has been reached in only 50 of them, that is mass treatment.

Mass treatment appears also to differ in principle from "shot gun" treatment. In the shot gun method the diagnosis is properly made, and the object aimed at is actually known to be present. A varied assortment of missiles of debatable value is then discharged at it, in the hope that one or other of them will take effect. When mass treatment is adopted, the proper missile suitable for hitting a specific object is at hand; what remains doubtful is whether the object is there to hit.—*D. B. Blacklock in Annals of Trop. Med. and Pasasitology.*

Salicylic acid, from which aspirin is derived, was discovered a century ago, but it was not till 1874 that it could be made at moderate cost for general use.—*S. N. L.*

Immunization Against Fowl Pox and Laryngotracheitis*

By L. E. BOLEY, Urbana, Illinois,
Assistant, Animal Pathology, University of Illinois

THE immunization of poultry against fowl pox and laryngotracheitis is very important in connection with poultry hygiene. Laryngotracheitis and fowl pox vaccination is primarily a control measure. The vaccination of poultry for laryngotracheitis is considered far more hazardous than fowl-pox vaccination for the reason that a high percentage of "takes" is less likely to be obtained in laryngotracheitis vaccination. In highly susceptible flocks this may result in immediate losses of fowls not reacting to the vaccination. Laryngotracheitis virus, because of its relative low resistance can be eliminated from the premises by disposing of all affected birds and all birds that have recovered from the disease and the use of sanitary methods.[1]

Types of Fowl-Fox Virus and Their Use

Three types of fowl pox virus are used in vaccinating against fowl pox: pigeon-pox virus, comb-propagated fowl-pox virus, and egg-propagated fowl-pox virus. Pigeon-pox virus is the dried, pulverized, pox lesions taken from a pigeon's breast at the height of the disease. Comb-propagated, fowl-pox virus consists of the dried, powdered scabs from the comb of a pox-infected chicken. Egg-progagated, fowl-pox virus is produced by innoculating incubating eggs with bacteria-free, fowl-pox virus and the harvesting of the lesion produced. Comb-propagated, fowl-pox virus and egg-propagated, fowl-pox virus are used to vaccinate poultry to produce a solid, lasting immunity. Pigeon-pox virus is used to vaccinate flocks that are in production. It produces a mild or modified immunity.

Production of Egg-Propagated Fowl-Pox Virus

A brief outline of the method of producing egg-propagated, fowl-pox virus for vaccination[2] follows: Fertile eggs that have been incubated for ten days are candled to allow marking of the air sac. A dental motor and disc are used to make a circular opening in the shell of the egg directly over the air sac. A small glass syringe carrying a 22-gauge needle is employed to inoculate the chorio-allantoic membrane with bacteria-free, fowl-pox virus in doses from 0.01cc to 0.02cc. The opening in the shell is closed with a cellophane disc and is held in position by the application of library paste. The inoculated egg is returned for further incubation. The fowl-pox lesions produced on the chorio-allantoic membrane are harvested at the third to fourth day after inoculation. The lesions are tested for sterility and dried in a vacuum. The standardization of this virus material is accomplished by treating susceptible chickens with serial dilutions of the virus under test. The material is also standardized by microscopic examination of smears, specially stained for Borrell bodies.

Preparation of Vaccine and Methods of Vaccination

Fowl-pox vaccine is prepared by suspending the fowl-pox virus in distilled water or a better diluent is a 20% aqueous solution of buffered glycerine. Vaccination of poultry is accomplished by applying the vaccine to the broken skin by either the feather follicle or the stick method. The feather follicle method is recommended in the application of pigeon-pox vaccine. The stick method is recommended in the application of fowl-pox vaccine both egg-propagated and comb-propagated.

* Presented at the Seventeenth Annual Illinois Veterinary Conference, University of Illinois, Urbana, November 12-14, 1936.

Determining Results of Vaccination

Successful vaccination is determined by the presence of "takes" where the vaccine was applied. Nine to ten days after vaccination each vaccinated fowl should be examined and those not showing satisfactory "takes" should be revaccinated. "Takes" are considered satisfactory if small, definite, scabs and moderate swellings are present at the point of application of the virus.

Laryngotracheitis Vaccine

Laryngotracheitis vaccine may be obtained from commercial houses or an autogenous vaccine may be made from, and for use upon, affected flocks. Autogenous vaccine may be made as follows: Obtain one or more birds that have just died of the disease or that are very sick and kill them. Remove the trachea carefully and slit it through its entire length. Scrape the exudate from the larynx and trachea by means of scissors or a small scalpel. After the desired amount of exudate has been obtained it should be placed in a mortar and ground. Add enough distilled water or buffered glycerine to the triturated material to make a 5% suspension. This suspension is the autogenous vaccine and should be used immediately. Such a product has some advantage in that it is fresh, virulent and should be specific for the particular strain with which the birds are afflicted.

Birds are vaccinated by introducing the vaccine into the bursal groove or bursal fold of the cloaca. The vaccine may be applied by means of a cotton swab or a medium stiff bristled brush. The brush is preferred because its bristles produce a mild abrasion of the mucous membrane thus promoting a "take." A further advantage of the brush is, that it does not waste the vaccine.

Determining Results of Vaccination

Vaccinated birds are checked for "takes" on the fourth or fifth day after vaccination. A "take" and its degree of severity is recorded according to the type of inflammation present in the mucous membrane of the cloaca. "Takes" are recorded as being poor, fair, good and excellent. All birds showing poor "takes" or no "take" should be revaccinated. The percentage of "takes" necessary to produce a satisfactory degree of immunity in a flock depends on the age of the birds in the flock. The percentage of "takes' in a flock one to three months of age should be 95%. The percentage of "takes" in a flock three to eight months of age should be 97%.

Birds should not be vaccinated if they are devitalized as a result of parasitic or bacterial diseases. Ordinary flocks should not be vaccinated unless the disease is already present on the premises or unless there is danger of exposure to disease from outside sources. Whenever a flock is vaccinated for either fowl pox or laryngotracheitis adequate sanitary measures should be instituted.

References

1. Massachusetts Plan.
2. Brandly, C. A., 1936. Studies on Egg-Propagated Viruses of Infectious Laryngotracheitis and Fowl Pox, *Jour. A. V. M. A.*, 41:4, pp. 587-99.

Horses and Low Temperatures

Jackson has proved that the law of adaptability which applies to men living in the polar regions applies with equal force to horses. For two and a half years he kept horses at 80° north latitude. During this time the thermometer never rose higher than 11° F. above freezing, while 70° to 80° F. below freezing were common temperatures. During the sleighing expeditions these animals lived in the open and wore one blanket, which found its way where most blankets get, under the hind feet. The animals were in a temperature of 45° F. below at night, which is as far below freezing point as summer heat is above it. It is interesting to note they did not suffer, and they were never frost-bitten, and never had a cough or cold. Exposure to a low temperature renders the body sensitive to a rise in the thermometer. Jackson tells that the July temperature of 40° F. felt like midsummer and far too warm. Conversely, living in a high temperature renders the body very sensitive to cold.—*E. L. Nye* in *Army Vet. Bul.* 31:96.

The Uvular Tonsils of Mammifers

THE amygdala or tonsil is a lymphoid organ annexed to the buccal mucosa and in general situated on the lateral plane connecting the mouth to the pharynx.

In most mammifers this opening takes the aspect of a veritable canal, named the isthmus faucium; which is limited below by the base of the tongue, above by the anterior face of the soft palate and, on each side, by the anterior and posterior pillars of that organ.

The tonsil is often called the palatine tonsil but the name is incorrect because this organ is never located at the level of the palate. The term was probably chosen to differentiate it from the pharyngeal tonsil situated at the limit of the pharynx and nasal fossae, from the lingual tonsil at the base of the tongue and from the tubular tonsil located at the opening of the Eustachian tube.

The anatomical study of the tonsil, seen in the principal mammifers reveals a number of variations in location, form, dimensions and structure.

Location.—Tonsils are found at various places on the isthmus faucium, generally, however, on its lateral face between the anteroir and posterior pillars of the soft palate (Chiropotera, Insectivora, carnivores, ruminants, Primates). Sometimes they are located close to the superior insertion of the soft palate (hedge hog, cat), or at the superior wall of the fauces (swine) which is a veritable staphyline tonsil. The tonsils can be found also in regions diametrically opposite to the preceding, that is to say at the base of the tongue (solipeds).

In general, the tonsil is hidden, in the cavity of the ismuth faucium and it may be well hidden (swine, solipeds). It may be sheltered at the depth of a little niche between the anterior and posterior pillars of the soft palate which it separates (rodents, Carnivora, Primates). It is not unusual to find the tonsil concealed by a mucous fold detached from the pillars of the soft palate (dog, cat). In cattle, sheep and goats, it is so well encased in the muscle tissue that it is invisible without dissection. In this event the tonsil manifests its presence by two or three orifices which open into the isthmus between the pillars.

Form.—Often the tonsil represents a well individualized organ easily isolated in the region where it reveals itself under very different aspects: Small and tubular (bats), granulation of the mucous membrane (squirrel), irregular spherical mass (rabbit), the form of a grain of wheat (cat), almond-like (man, dog), bilobar (ox), trilobar (sheep and goats), lozenge or racket shaped (swine) etc. In the soliped, the tonsil is a sort of glandular chain with an antero-posterior axis, without relief and confounded with the buccal mucous membrane.

The tonsil has a superficial and deep face. The superficial face turned to the cavity of the ismuth faucium presents a series of longitudinal or transverse ridges with veritable openings side by side and an infinite number of punctuations which seem to extend more or less deeply into the interior of the organ.

Dimensions.—Essentially, the dimensions vary with the species. Some animals, of which the shrew and the bat are examples, have tonsils of the size of the head of a pin. On the contrary, the tonsil of the ox has considerable volume: 35 to 40mm. long, 30mm. wide, and 20 to 25mm. thick. The lymphoid chain that represents the tonsil of the horse, ass and mule may be 80mm. long and 10 to 15mm. wide. The tonsils of the squirrel, domestic and wild rabbits, hare, cat, dog, and small ruminants have dimensions intermediary to those of the Chiroptera and large ruminants. The tonsil of the hog is characterized by its relative thickness (8 to 10mm.) and by the relations of its length (50mm.) to its width (30mm.).

Vascularization.—There are not many

[1] Bressou and Florentin 1937. Recueil de Médecine Vétérinaire, 113:1. Translated by L. A. Merillat, Chicago.

variations to point out in regard to the irrigation of the tonsil. Nearly always there is one small nutrient arteriole whose tract is simple but slightly winding. It originates from ramifications of the lingual artery and enters the tonsil at its depth and then branches out through the tonsillar tissue. However, in small ruminants, the blood supply of the tonsil comes to a large extent from ramifications of the pharyngeal artery. The veins are satelites of the arteries and constitute veritable plexuses which discharge mainly into the internal maxillary vein. The lymphatics are tributaries of the retropharyngeal glands. The nerves derive from the glossopharyngeal.

Structure.—Before pointing out the interesting structure presented by mammifers, let us examine the general aspects of the structure. Tonsils present here and there invaginations or conduits more or less diverging, called tonsillar crypts which start from the surface of the organ to penetrate to its depths where there is a fibrous capsule—the capsule of the tonsil (fig. 1). The capsule is composed of detachments from the interstititial tissue, mainly the vertical layers directed from the surface of the organ through the lymphoid tissue. The fibrous partitions bound the tonsillar lobes. The space between the interlobular septa and the fibrous capsule on the one hand and the walls of the crypts on the other, is occupied by lymphoid tissue. Each lobe, therefore, comprises in its make up one tonsillar crypt, one tonsillar capsule, the interlobular septum and a tissue proper.

The crypts have variable directions and dimensions: Oblique, sinuous, vertical, extending sometimes as far as the fibrous capsule. The walls of the crypt are paved by a stratified epithelium similar to that of the mucous membrane of the pharynx. In certain places one notes also leucocytic infiltration that may involve the entire thickness of the epithelium and dislocate it entirely. This infiltration always corresponds to a reaction process having for its purpose the defense of the buccal mucosa against mibrobian invasions which contaminate the surface.

The tonsillar capsule is a connective or fibrous layer disposed around the crypts to form a net-work around the abundant lymphoid tissue. The latter is represented by numerous lymphoid elements disposed without order or on the contrary, reassembled to form lymphoid nodules.

The principal types of cells encountered are: Numerous lymphocytes, lymphoblasts,

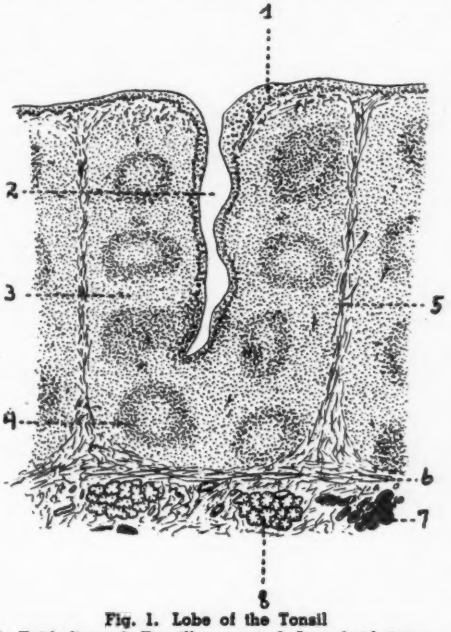


Fig. 1. Lobe of the Tonsil
1. Epithelium; 2. Tonsillar crypt; 3. Lymphoid tissue; 4. Lymphoid nodule; 5. Interlobular septum; 6. Tonsillar capsule; 7. Muscular bundle; 8. Gladular acini.

polynuclears, eosinophiles, and neutrophiles, and other elements of minor importance. Only lymphocytes and lymphoblasts represent normal tonsillar elements. The others owe their presence to irritation, to an inflammation on the surface.

The lymphoid nodules, are variable in number, form and dimensions. They surround the crypts in one or more places. They may be homogenous or they may have a clear center. The first nodules are formed of piled up lymphocytes and disposed without precise order; the second, a crown of lymphocytes, and the center clear is constituted of elements that have the character of lymphoblasts.

There is to be mentioned in regard to the lymphoid tissue, the existence of lymphatic channels having the aspect of narrow, elongated, irregular grooves, numerous blood vessels and nerves. One encounters constantly bunches of glands annexed to the tonsils in the form of islets of variable dimensions which localize either outside of the fibrous capsule or within in contact

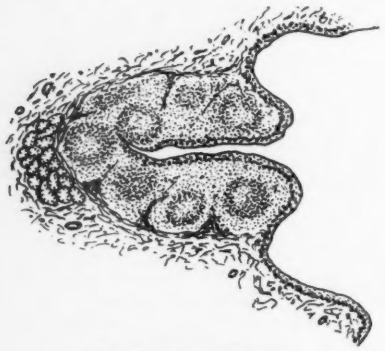


Fig. 2. Acryptic Tonsil
Note the absence of crypt and the presence of uniform lymphoid tissue.

with the lymphoid tissue. The glands are of the serous type.

The variations in structure presented by the tonsils of mammifers are very numerous. However, there exists among the different types certain traits in common, which lead to the following classification:

A. Acryptic tonsils (evaginated); hedge hogs, boreillards, shrews.
B. Cryptic tonsils (invaginated);
   a. Monocryptics:
      1. Simple — bats, squirrels, hares, rabbits.
      2. Ramifying—cats, dogs.
   b. Polycryptics:
      1. Conglomerate organ—sheep, goats, oxen, man.
      2. Diffuse organ—hogs, horses, asses, mules.

The acryptic tonsils exist in the form of a granulation composed entirely of uniform lymphoid tissue. The superficial face reveals no trace of tonsillar crypt (fig. 2).

The tonsils of the second group present one or more crypts. The tonsillar crypt is more often a simple conduit limited by two lips of more or less uneven thickness (fig. 3). The lymphoid tissue which comports with the presence of the lymphoid nodules can be distributed in a very irregular fashion only incompletely sur-

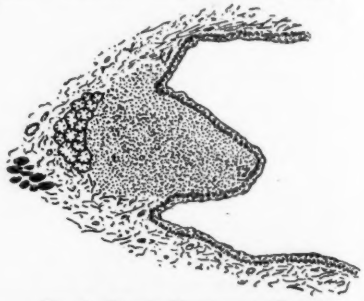


Fig. 3. Simple Monocryptic Tonsil
Crypt non-ramifying surrounded by lymphoid tissue proper which presents the lymphoid nodules.

rounding the crypt, as for example in the hare.

Sometimes the crypt presents a bifurcation at its deep extremity. This is very visible in the cat and less so in the dog (fig. 4). The prolongations which come from the peritonsillar capsule separate the tissue proper and intercept at intervals the lymphoid nodules.

The polycryptic type may be conglom-

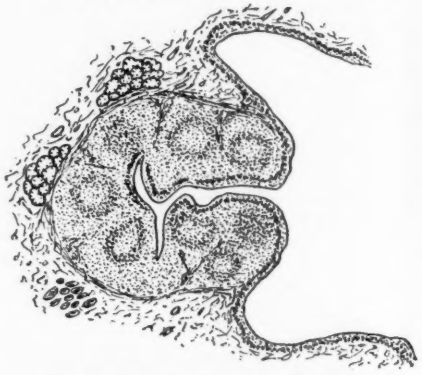


Fig. 4. Ramifying Monocryptic Tonsil
The crypt presents a bifurcation at its deep extremity.

erate or diffuse. The former is constituted by the reunion of the lobes which form lympho-ephthelial masses each possessing a crypt in which secondary crypts of smaller caliber form (fig. 5).

Diffuse tonsils result from the juxtaposition of several lobes placed side by

side and separated one from another by the fibrous septa (hogs) (fig. 5). The lobes may reassemble to form a series of lymphoid groups separated one from another which comprise between them the isolated crypts seen in the horse and ass.

Such are the varieties in structure presented by tonsils. Only embryology can explain the variable configuration of tonsils.

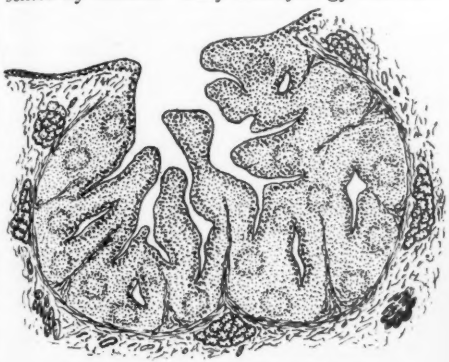


Fig. 5. Conglomerate Polycryptic Tonsil
Note the existence of two principal crypts from which several secondary ones proceed.

In short, tonsils exist in all of the principal types of mammifers; however, their absence must be noted in certain rodents (rat, mouse, guinea pig, mole). This organ as we have pointed out has numerous variations in position, form, dimensions and structure.

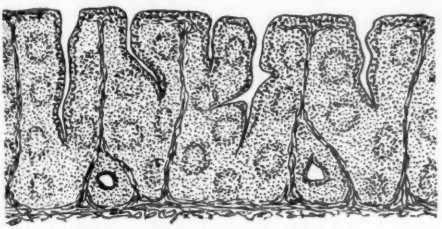


Fig. 6. Diffuse Polycryptic Tonsil
Tonsillar lobes placed side by side separated one from another by septa which detach from the deep tonsillar capsule beneath.

In view of the considerable volume the tonsil has in certain species one cannot *a priori* consider this organ as simple or useless. Its location in the passage between the mouth and the pharynx and the nature of its constituent elements justifies the belief that the tonsils fill the rôle of an organ of defense of the buccal mucosa against the invasion of microorganisms.

But only embryological and anatomopathological studies would solve the obscure question of its origin and physiological significance.

Big Head in Sheep

So-called big head, thick ears, proteid anaphylaxis, or allergic reaction, prevailed from the middle of June to the middle of August, in Missouri and adjacent territory, during the past season.

This condition has been relatively common for the past several years. It is primarily a disease of lambs.

Photosensitization (Bighead) in a Goat

During the present outbreak the malady is more severe than it has been in recent years and the fatality rate has been higher.

As in former years, treatment was unsatisfactory. It is advisable to protect affected and exposed sheep and lambs from the light and keep them on dry feed.

Briefly, this ovine malady is an economic factor in the sheep industry and unless ways and means of control are solved it will probably be necessary to breed for winter lambing.

The major portion of the affected lambs manifested an icterus. This may be of significance in establishing the cause and developing a treatment.—*A. T. K.*

The Effect of Certain Volatile Halogenated Hydrocarbons on the Eggs and Larvae of Nematodes in Horse Manure

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Introduction

The development of methods for destroying the vitality of parasite eggs and larvae in stable manure has received considerable attention from veterinary parasitologists, particularly during the past few years. Conservation and use of the heat which develops in the course of decomposition of manure stored in an insulated box has been recommended for this purpose by Schwartz, Price and McIntosh[1]. The use of a number of different chemical substances for killing parasite eggs and larvae in manure and on pastures has been suggested by various investigators, particularly Parnell[2,3,4]. Collecting stable manure in a pit and treating it with urine or a solution of urea has been recommended by Parnell. Practically all of the substances tested for their action against the free-living stages of parasitic nematodes in manure belong to a general class of chemicals which may be broadly designated as fertilizing agents.

It appeared to one of us (J. M. S.) from previous experience with anthelmintic action of halogenated hydrocarbons[5,6,7,8], that the properties responsible for the anthelmintic action of compounds of this class might have a destructive effect on the free-living stages of parasitic nematodes in manure. This class of compounds includes substances differing widely in volatility and solubility in water. Many are commercially available in large volume at low cost. Two such commercial preparations, a mixture of isomeric dichloropentanes and a mixture of three volumes of ethylene dichloride and one volume of carbon tetrachloride, were accordingly chosen for trial as to their action against strongyle eggs and larvae in horse manure. The physical properties of these preparations appeared to be suitable for the purposes of the tests. Later, for purposes of comparison, tests were also made with ethylene dichloride and carbon tetrachloride. Horse manure was selected for these tests because of the economic importance of horse strongyles; the latter, in heavy infestations, are responsible for general unthriftiness and debility in horses, often causing death from embolism. Furthermore, horses are often sufficiently valuable to warrant considerable expenditure of money and labor in order to protect them from parasitic infestation.

The tests reported in this paper have involved small quantities of feces that could be handled readily in the laboratory.

Materials, Methods and Procedure

The chemical constitution and relevant physical properties of the compounds tested are given in Table 1.

The action of each of two or more of the above alkyl hydrocarbons against strongyle eggs was tried in each of eight tests. The first test (test 1), a preliminary experiment, was uncontrolled; in other respects it was carried out in the same manner as is described below for tests 2 to 8. In tests 2 to 8, the procedure was as follows:

A batch of fresh feces from one horse was divided into three or more equal portions as indicated. Each portion of feces was placed in the bottom half of a double glass dish having a capacity of about 0.05 cubic foot. Except in test six, one portion of feces served as a control. The dish containing the control portion was covered and set aside in a cupboard. In test six, two controls were used. A measured quantity of one of the liquid chemicals to be tested was poured onto the feces in each of the remaining dishes. The lids were promptly placed on the dishes, which were then set aside in the cupboard. With one exception, a ring of petrolatum had been previously

TABLE 1—Boiling Point, Specific Gravity and Water Solubility of Compounds Tested

Name	Formula	Boiling point °C.	Specific gravity at 20°C.	Solubility*
Dichloropentanes	$C_5H_{10}Cl_2$	130-200[1]	1.07[1]	3500 (25°C.)
Ethylene dichloride carbon tetrachloride mixture[2]			1.34[1]	
Ethylene dichloride	$C_2H_4Cl_2$	83.5	1.25	115 (20°C.)
Carbon tetrachloride	CCl_4	76.5	1.58	1250 (20°C.)

smeared on each of the lids to aid in confining the vapor of the chemical used. The presence or absence of petrolatum on lids of the dishes containing control portions of feces is indicated for each test in Table 2. At the expiration of the desired interval, the chemically treated and the control portions of feces were removed from the dishes and spread on separate clean sheets of paper, and left there for some time to permit dispersion of residual vapors. As indicated in Table 2, the interval from the time of addition of the chemicals to the commencement of the aeration was considered the period of exposure to the chemicals. After exposure to the air of the laboratory, each portion of feces was returned to its proper dish, and the lid was freed from petrolatum and replaced on the container. The dishes were again set aside for a time sufficient to permit infective larvae to develop. Each portion of the feces was then separately examined for infective larvae by the Baermann technique. The feces remained in the Baermann apparatus a minimum of 24 hours before fluid was withdrawn from the rubber tube; the numbers of larvae recovered were determined. If the number of larvae was small, direct counts were made; if the number was large, a dilution method was employed.

In tests 9, 10, and 11, the procedure was similar to that described above, except that, after being placed in the dishes, the fresh feces were cultured for from 29 to 46 hours at room temperature before the chemicals to be tested were added to the test portions of the feces. In tests 12 and 13, the batch of feces used was kept for about one week before being divided into equal portions and placed in the dishes for the test. Infective larvae were thus present when the chemicals were added to the contents of the test dishes. When the desired exposure to the chemicals had taken place, the control and the treated portions of the feces were placed directly in the Baermann apparatus. In all other respects the procedure was similar to that described above. In tests 14 and 15 the batch of feces was divided into three equal portions and placed in the dishes. About one week elapsed before the chemicals were added to the two portions of feces; at this time infective larvae were already present. In other respects the procedure was the same as in tests 12 and 13.

Experimental Data

An examination of the data of tests two to eight, given in Table 2, shows the following results: Under the conditions of the experiments, a preparation of dichloropentanes almost completely prevented the development of infective larvae when fresh horse feces were treated in proportions of from about 0.5 to 0.8cc per 100 grams of feces in five tests. The number of larvae reaching the infective stage in feces so treated were from 0 to 0.0006% of the number of larvae recovered from the respective control cultures. In feces treated with a commercial mixture consisting of ethylene dichloride 75% by volume and carbon tetrachloride 25% by volume, in the proportion

* Amount of water required (cc's) to dissolve 1 gm. of the compound at given temperature.
[1] Manufacturer's specifications.
[2] Ethylene dichloride 75% by volume, carbon tetrachloride 25% by volume.

TABLE 2—RESULTS OF TESTS INVOLVING FRESHLY PASSED HORSE FECES CONTAINING STRONGYLE EGGS.

Test No.	Container	Feces (grams)	Chemicals used	Quantity*	Exposure†	Aeration§	Interval**	Larvae††
1	1	1170[4]	dichloropentanes	0.21	48	2	10	593
	2	1170[4]	E-C mixture[1]	0.21	48	2	10	25
2	1[2]	700[4]	none	none	none	4	7	32,800
	2	700[4]	dichloropentanes	0.71	90	4	7	0
	3	700[4]	E-C mixture[1]	0.71	90	4	7	26
3	1[3]	700[4]	none	none	none	3	6	436,680
	2	700[4]	carbon tetrachloride	0.71	46	3	6	1
	3	700[4]	ethylene dichloride	0.71	46	3	6	15
4	1[3]	703	none	none	none	2.25	7	141,890
	2	755	dichloropentanes	0.66	23	2.25	10	0
	3	733	E-C mixture[1]	0.68	23	2.25	10	3,730
5	1[3]	370	none	none	none	2	10	350,000
	2	370	dichloropentanes	0.81	72	2	10	2
	3	370	E-C mixture[1]	0.81	72	2	10	950
6	1[3]	600	none	none	none	1.5	8	869,440
	2[3]	600	none	none	none	1.5	8	852,600
	3[3]	600	dichloropentanes	0.83	50.5	1.5	8	0
	4	600	dichloropentanes	0.83	50.5	1.5	8	1
	5	600	E-C mixture[1]	0.83	50.5	1.5	8	15
7	1[3]	550	none	none	none	3.25	10	363,000
	2	550	dichloropentanes	0.46	46.5	3.25	10	0
	3	550	carbon tetrachloride	0.91	46.5	3.25	10	29
	4	550	ethylene dichloride	0.91	46.5	3.25	10	1,390
8	1[3]	500	none	none	none	3.5	9	67,925
	2	500	carbon tetrachloride	0.80	40.5	3.5	9	125
	3	500	ethylene dichloride	0.80	40.5	3.5	9	50

* Quantity (cc's) of chemical used per 100 gm. of feces.
† Duration (hours) of exposure to chemical.
§ Duration (hours) of the aeration period.
** Interval (days) from the beginning of the test to date feces were examined.
†† Infective larvae recovered.

[1] Ethylene dichloride 75% by volume and carbon tetrachloride 25% by volume.
[2] No petrolatum smeared on lid of container.
[3] Petrolatum on lid of container.
[4] Approximate.

of about 0.7 to 0.8cc per 100 grams of feces, the number of larvae recovered were from 0.002 to 2.6% of those recovered from the respective control cultures in four tests. In three tests, feces treated with carbon tetrachloride in the proportion of about 0.7 to 0.9cc per 100 grams of feces yielded from 0.0002 to 0.18% of the number of larvae recovered in the respective control cultures of feces; in the same tests, the percentages were from 0.003 to 0.4 when feces were treated with ethylene dichloride in similar proportions per 100 grams of feces.

In the course of test 1, it was noted that about 20 ascarid eggs recovered from feces treated with ethylene dichloride and carbon tetrachloride, were all undeveloped. These feces were removed from the screen of the Baermann apparatus and, following removal of excess moisture, were cultured for a period of 12 days. Numerous dead strongyle eggs and several ascarid eggs were then isolated from the feces by means of a flotation method. Of 234 ascarid eggs examined, 232 were undeveloped. The contents of the eggs had a well-preserved appearance; apparently development had ceased at stages of from 1 to 16 cells. Additional feces containing ascarid eggs have not been available for experimentation. Numerous dead strongyle eggs were also isolated from the treated feces of test five. In the course of the above eight tests it was repeatedly noted that when feces which had been treated with the chemicals were removed from the dishes for aeration, usually about 48 hours after the cultures were started, no living or dead preinfective larvae could be found in rinsings from the dishes; the failure of the eggs to hatch is evidence that the chemical vapors had affected them adversely.

TABLE 3—Results of Tests With Various Chemicals on Preinfective and Infective Strongyle Larvae in Horse Feces

Test No.	Container	Feces* (grams)	Development†	Chemicals used	Quantity§	Duration‖	Aeration**	Interval††	Larvae§§	Activity¶
9	1[3]	650	——	none	none	none	5.5	12	511,920	95
	2	650	preinfective	dichloropentanes	0.77	66	5.5	12	70	95
	3	650	preinfective	E-C mixture[1]	0.77	66	5.5	12	950	95
10	1	500	——	none	none	none	3.5	8	459,800	95
	2	500	preinfective	dichloropentanes	0.5	51	3.5	8	2	100
	3	500	preinfective	dichloropentanes	1.0	51	3.5	8	0	—
	4	500	preinfective	E-C mixture[1]	1.0	51	3.5	8	0	—
11	1	500	——	none	none	none	4	13	29,800	95
	2	500	preinfective	ethylene dichloride	1.0	46	4	13	4,400	95
	3	500	preinfective	carbon tetrachloride	1.0	46	4	13	10	100
12	1[3]	700[3]	——	none	none	none	none	9	159,700	95
	2	700[3]	infective	dichloropentanes	0.71	43	none	9	88,400	35
	3	700[3]	infective	E-C mixture[1]	0.71	43	none	9	300	5
13	1	450	——	none	none	none	none	8	106,500	95
	2	450	infective	dichloropentanes	2.0	72	none	8	4,400	40
	3	450	infective	E-C mixture[1]	2.0	72	none	8	165	1
	4	450	infective	ethylene dichloride	2.0	72	none	8	465	0
	5	450	infective	carbon tetrachloride	2.0	72	none	8	194	0
14	1	600	——	none	none	none	none	9	34,200	95
	2	600	infective	dichloropentanes	0.83	72	none	11	2,550	25
	3	600	infective	E-C mixture[1]	0.83	72	none	11	10,500	95
15	1	450	——	none	none	none	none	13	21,900	95
	2	450	infective	dichloropentanes	1.11	48	none	13	2,635	20
	3	450	infective	E-C mixture[1]	1.11	48	none	13	2,750	0

[1] Ethylene dichloride 75% by volume and carbon tetrachloride 25% by volume.
[3] No petrolatum on lid of container.
[3] Approximate.
* Quantity (gm.) of feces.
† Stage of development of larvae in feces when chemicals were applied.
§ Quantity (cc's) of chemicals used per 100 gm. of feces.
‖ Duration (hours) of exposure to chemical.
** Duration (hours) of aeration period.
†† Interval (days) from time cultures were started to examination.
§§ Infective larvae recovered.
¶ Estimated proportion (%) of larvae showing activity.

The data of tests nine and ten, in each of which the action of the dichloropentanes and of the mixture of ethylene dichloride and carbon tetrachloride were tested against preinfective larvae, and of test 11, in which carbon tetrachloride and ethylene dichloride were separately tested on preinfective larvae, are given in Table 3. This table also shows the data obtained from four tests on infective larvae, tests 12 to 15, inclusive. Unless otherwise noted in the table, a ring of petrolatum was applied on the covers of the various containers when the chemicals were added to the contents. The petrolatum was removed at the conclusion of the period of exposure to the chemical.

It is evident from the data given in Table 3 that, except for ethylene dichloride, the halogenated alkyl hydrocarbon preparations used in this investigation showed about the same degree of effectiveness against preinfective larvae in feces, in tests 9, 10, and 11, as they showed against strongyle eggs in the previous tests.

In tests 12, 14, and 15, the results of treatment of feces containing infective larvae with the mixture of dichloropentanes and the mixture of ethylene dichloride and carbon tetrachloride were variable, and gave no definite indication as to the comparative effectiveness of the two preparations. It is evident that both preparations showed less effectiveness against infective larvae than against eggs and preinfective larvae. In test 13, satisfactory results against infective larvae were obtained with ethylene dichloride, carbon tetrachloride and the commercial mixture of these two compounds; the proportion used, however, was 2cc per 100 grams of feces.

Discussion

In the above tests, carbon tetrachloride, ethylene dichloride, a commercial mixture of these two compounds, and a mixture of dichloropentanes, have been demonstrated to be markedly destructive to the vitality of strongyle eggs and preinfective larvae in horse feces exposed to the vapors of these substances for periods ranging from 23 to 90 hours. This destructive action resulted when these chemical agents were used in proportions of about 1cc per 100 grams of feces. This amount is equivalent to 32 pounds of carbon tetrachloride, 24 pounds of ethylene dichloride, or 22 pounds of dichloropentanes, per ton of manure. The cost of these quantities at the source of production, on the basis of costs per pound of $0.0525 for carbon tetrachloride, $0.055 for ethylene dichloride, and $0.025 for dichloropentanes, would be $1.58, $1.32, and $0.55, respectively. The dichloropentanes were, in fact, effective when used in the proportion of about 0.5cc per 100 grams of feces. Thus, while the experimental data suggest that any of the substances tested could be used to destroy strongyle eggs and preinfective larvae in stable manure, treatment with the dichloropentanes would evidently be cheapest. Further experiments on a large scale to test the practicability of use of this substance for this purpose are considered warranted by the data. While the data show that the dichloropentanes, in the proportion of 2cc per 100 grams of feces, killed a large percentage of infective larvae also and hence would be of value against the parasite content of manure of any age, treatment of manure not more than a day or two old would obviously be most effective and economical. Although these tests did not show clear-cut evidence as to the comparative importance of the differing water solubilities and volatility of the substances used, the relative insolubility and high boiling point of the dichloropentanes appeared to be advantageous. The results obtained in these tests suggest the desirability of testing related halogenated alkyl hydrocarbons for their ability to destroy the free-living stages of nematode parasites in manure.

Summary

1. Four volatile halogenated alkyl hydrocarbon preparations were tested in the laboratory for their possible lethal action on eggs, preinfective and infective larvae of strongyles in horse feces. The feces were placed in covered dishes and were exposed to the vapors of the various chemicals from 23 to 90 hours.

2. Comparison of the numbers of infective larvae subsequently recovered in feces so treated with the numbers of infective larvae recovered in equal amounts of untreated feces of the same lot was the criterion for determining the lethal action of the chemicals tested.

3. In feces treated with a mixture of dichloropentanes, in the proportion of from about 0.5cc to 1cc of the liquid per 100 grams of feces, nearly all eggs or preinfective larvae were killed.

4. A commercial mixture consisting of ethylene dichloride 75% by volume and carbon tetrachloride 25% by volume used in similar proportions was slightly less effective than the dichloropentanes in killing eggs and preinfective larvae.

5. The lethal action of either the dichloropentanes or the mixture of ethylene dichloride and carbon tetrachloride, when used in similar proportions, was less consistent and less effective against infective larvae than against eggs or preinfective larvae.

6. On the basis of one test, the mixture of ethylene dichloride and carbon tetrachloride was very effective in killing ascarid eggs in horse feces.

7. Carbon tetrachloride in the proportion of slightly less than 1cc per 100 grams of feces was very effective in killing eggs and preinfective larvae of strongyles; ethylene dichloride was slightly less effective than carbon tetrachloride against the eggs and appeared, on the basis of one test, to be the least effective against preinfective larvae of the four preparations tested.

8. In one test, ethylene dichloride, carbon tetrachloride, and the commercial mixture of these two compounds, used in the proportion of 2cc per 100 grams of feces,

were highly effective in killing infective larvae.

9. The available data warrant carrying out large scale tests on manure one or two days old to determine the practicability of using the dichloropentanes, the most effective and economical of the chemical agents tested, to kill horse strongyle eggs and pre-infective larvae in stable manure.

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Studies by the United States Department of Agriculture, Bureau of Dairy Industry, suggest that random bacteriological or chemical anlysis of milk is of limited value unless the sequence of the change is well established, because a high leucocyte count and the presence of streptococci may occur for considerable time before physical or chemical changes occur in mastitis milk.

Dysentery in colts, calves, lambs and pups responds to treatment with milk soured by *Lactobacillus acidophilus.*—*E. S. R.* 77:106.

The tissue vaccine method for the control of hog cholera which does not introduce active virus into the field, is said to be a satisfactory substitute for the simultaneous method; it produces an adequate immunity, and markedly reduces the possibility of losses from pneumonia or enteritis.—*E. S. R.* 77:107.

A Case of Mycetismus in Ducks

In the latter part of June (1937) a dozen Muscovy duck eggs were hatched. The mother and offspring were kept confined under a triangular coop until about 3½ weeks later, when they were released early one morning after a series of showers the preceding day.

Upon their release, the wife of the writer noticed that the ducklings made for some mushrooms (later found to be *Amanita phalloides* or the Destroying Angel which grow in abundance in Connecticut at this time of the year). She did not know how many of the birds had ingested the poison, but in a little while we were soon to know. Knowing the toxic character of these fungi, my wife immediately "shooed" the mother and her family back into the coop and locked them up. In about one-half to one hour later four of the ducklings were seized with violent convulsions which lasted for 20 minutes to an hour before the fatal end of all victims except one—that one recovered after several days of nursing (in the form of warmth and extra care).

On autopsy of the three victims, there were marked signs of inflammation in the digestive tract. In one instance, there was a marked degeneration of the liver with wide yellow patches and extensive extravasation of blood. The intestinal contents showed small pieces of the Amanita originally observed by my wife. The sole survivor is stunted.

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Vitamins and Distemper

VIII CONCLUSION

By W. O. FROHRING, Cleveland, Ohio

IN THIS series of experiments the subject of canine distemper has been studied principally from the nutritional standpoint. It was stimulated by the fact that many cases of distemper in dogs are of the respiratory type and that experimental studies in other animals have indicated that vitamin A deficiency predisposes to respiratory infections. The plan of the original experiments outlined was changed in view of the unexpected results obtained in the first preliminary tests.

BY feeding a synthetic diet which was vitamin-free, the importance of other vitamin deficiencies connected with a pathological condition, diagnosed as distemper at the present time, became apparent. Puppies exhibiting signs of pure vitamin deficiencies are sick looking little animals in spite of the fact that no infection may be present. Many of these deficiency symptoms may be, and unquestionably often are, mistaken for some form of distemper.

Some of the symptoms of various vitamin deficiencies that have been observed are anorexia, emaciation, vomiting, diarrhea (sometimes bloody with mucus), neuromuscular manifestations such as convulsive seizures, eye diseases, foul breath, paralysis, loss of hair, with or without dermatitis, and sudden death—a syndrome strikingly like that of canine distemper. Usually only two or three of these symptoms are present, depending, of course, on the kind and severity of the deficiency.

As has been mentioned previously in this report, the term "distemper" is used very broadly in relation to sick puppies, especially by the dog owner. Too often a sick-appearing puppy, or a puppy with a lack of appetite, is considered as either having distemper, or coming down with it. Whether or not the puppy exhibits respiratory infections or diarrhea, or nervous symptoms determines in the opinion of the dog-owner whether or not he has the respiratory type of distemper, the intestinal type, or the nervous type. These experiments brought out forcibly the fact that some of these symptoms, supposedly due to infection, are in reality very often simply manifestations of one or more vitamin deficiencies.

IT HAS been shown that it is a comparatively simple matter to produce experimentally on vitamin deficient diets that are adequate in other respects, many of the symptoms of distemper, and certainly the general appearance of a very sick puppy without infection being present. In the case of the very young puppy, it may be produced in a comparatively short time because of its low storage of vitamins in its tissues.

If a vitamin deficient puppy is exposed to an infection, the symptoms of vitamin deficiency are no doubt ascribed to the infection rather than to the vitamin deficiency. This often produces a complicated picture because of the many vitamin deficiency symptoms produced by deficiencies of the different vitamins, and also a complicating effect of an infection at the same time.

It must not be inferred from these experiments that puppies that are normal nutritionally cannot get an infection. The observation made on these puppies herein reported, in addition to others that were under observation suggests, however, that in the case of the puppy that is not nutritionally sound, especially from the vitamin standpoint, if an infection does occur, it may be due to an organism, ordinarily non-pathogenic, or to a less virulent type of infection which has gained a foothold due to the low resistance in the host. Of course, a severe infection may attack a puppy that is not nutritionally sound. The nutritional state of a puppy at the time of the infection indubitably effects the prognosis of the disease and particularly the so-called after effects, as veterinarians well know.

THESE studies were confined almost entirely to young, growing puppies. As has been mentioned before, puppies are born with relatively low reserves of vitamins stored in their tissues. The diet of the bitch, of course, determines to a certain extent the nutritional state of the puppy, when it is born and also the vitamin content of her milk. At best, only a modest reserve of vitamins is built up by a good bitch's milk, because there is a limit to the amount of vitamins that can be incorporated in the milk by the mother in spite of the very liberal intake of the vitamins in her diet. It then becomes of primary importance to avoid nutritional deficiencies from the time of weaning until the puppy matures. At maturity and afterward the vitamin requirements of the dog are probably lower than at earlier periods since growth has stopped. Vitamins are necessary for growth. The minimum growth requirements, however, are not always the optimum vitamin requirements. That is to say a puppy's nutrition may be adequate for fair or even good growth and yet fall below that required for vigorous health and a high degree of resistance to disease.

These experiments indicate that more than enough for the growth requirements is desirable, and that the puppy's requirements for at least some of the vitamins are much higher in proportion to body weight than those of the albino rat. This is particularly true of vitamin A as is shown by the studies with puppies herein reported. Since vitamins are necessary not only for maintenance, but for growth, this is not surprising in view of the rapidity of growth of puppies during the first year of life, especially the larger breeds. The faster a puppy grows, the greater its requirements of vitamins due to this fast growth. The capacity of the puppy's stomach limits the total quantity of food that it can eat and therefore, it becomes necessary to include in this limited quantity that the puppy can consume, an adequate amount of the essential elements needed; not only carbohydrates, proteins, fats and minerals, but the accessory food factors called vitamins, the absence of which causes such profound nutritional disasters.

Anorexia

One of the most striking facts brought out by these experiments is that the first sign of deficiency of *any* of the vitamins studied is lack of appetite. At the first appearance of anorexia, the animal is in a good state of nutrition, appears well in every other way, but suddenly begins to consume less food. In actual practice, this probably results in a vicious circle; the reduced intake of food resulting in a reduced intake of other vitamins, which may have been present in barely adequate amounts, thus producing sometimes a very complicated vitamin deficiency picture. When such a condition develops in a puppy, at the first sign of anorexia, the owner probably concludes that the puppy is "tired" of the food. Experiments have shown that when additional vitamin supplements are given, the puppy will again eat the same food with relish. The mild vitamin deficiency must be corrected before the animal's appetite will become normal.

IT WAS noted in these experiments in connection with vitamin A that anorexia was *always* the first symptom of this deficiency. The administration of vitamin A in curative doses, in the form of carotene in oil, resulted in a prompt return of a normal appetite. This was also true of lactoflavin and the other vitamins studied.

When a vitamin deficiency is suspected, it is very difficult to diagnose the particular vitamin responsible for the deficiency because the deficiency symptoms are not always clearly apparent. Another significant fact brought out in these experiments is that in very young puppies, it is sometimes difficult to bring out, in an experimental way, the classical signs of deficiency exhibited by older dogs. The important observation is that these very young puppies may die suddenly without showing any of the classical symptoms of deficiency.

The safest plan to follow is to supply both fat-soluble and water-soluble vitamins in sufficient amount to prevent deficiencies, rather than to depend on curative measures

after the deficiency appears. This is particularly true of some of the water-soluble vitamins since they are not yet available in a sufficiently concentrated form to produce dramatic cures. If the breeders of show dogs could see the irreparable damage that is produced in the general appearance of the dog by a severe vitamin deficiency, even though he be eventually cured of the deficiency, I feel sure they would be interested in preventive measures.

Vitamin Supplements

Many preparations are on the market which it is claimed contain vitamins A, B, D, G, etc. It is not very difficult to produce a preparation containing several different vitamins. The important point is, however, that in most cases only one or two of these vitamins are likely to be present in sufficient quantities to be of value. A special change in the diet of the puppy is the only satisfactory way to increase the intake of some of the vitamins. The most outstanding product for this purpose is liver. Dried yeast is also a very useful source of the vitamins of the B complex. It serves its most important usefulness in preventing nutritional deficiencies rather than curing them. In fact, it may be well to again emphasize the importance of making a determined effort to prevent these deficiencies rather than to attempt to diagnose or cure them after they have appeared.

PROBABLY the vitamin that has obtained the most publicity so far as the layman is concerned is vitamin D. The fact that it has an antirachitic effect similar to that of the ultra-violet rays of the sun has made it quite easy to educate the public on the importance of vitamin D as the "sunshine vitamin." Without minimizing the value of vitamin D in the prevention of rickets, it may be said the importance of this vitamin has been emphasized to the point where the layman believes that he has solved his vitamin problem when he makes sure that vitamin D is included in the diet of his puppy. These experiments bring out forcibly the fact that in dogs far more severe nutritional disasters result from deficiencies of any of the other vitamins. In other words, for the puppy vitamin D deficiency is the least serious of the vitamin deficiencies.

PRODUCERS of dog food sometimes proudly refer to the fact that several generations have been raised on the particular food. An examination of some of the methods used discloses the fact that albino rats were used in the experiment. The fact that several generations of rats have been raised on some particular food in no sense demonstrates that this particular food is adequate for the dog. As has been pointed out before, the requirements of the dog per pound of body weight in many instances is higher for the various vitamins than the requirements of the rat. Of still greater importance is the fact that at least one very important factor required by the dog, namely—the blacktongue preventing factor—is not necessary for the proper nutrition of the rat at all. The rat either does not need it or else synthesizes it as it does vitamin C. While the albino rat is of value in determining the number of units of vitamin D, A, lactoflavin and B_6 content in a given food, rat tests are valueless in determining presence, absence or the amount of the blacktongue preventing factor.

The ease with which a pure vitamin deficiency may be confused with an infectious disease is shown by the erroneous belief, long held, that blacktongue in dogs is an infectious disease. It can be produced by pure nutritional means by the use of the so-called blacktongue diet, which is deficient in this particular food accessory.

A recent report[1] indicates that nicotinic acid and nicotinic acid amide, in quantities of 30 mg. daily, dramatically cured canine blacktongue. In view of the importance of this factor in the nutrition of the dog, this represents a major contribution from the standpoint of canine nutrition.

Standards for Dog Foods

The solution of the problems of the producer of dog foods was not the objective of these studies, yet standards for the vitamin content of commercial dog food are worthy of discussion in relation to these

experiments. It is very easy to compound a food mixture in which the *presence* of many vitamins may be demonstrated. Whether they are present in adequate amounts is a matter of much greater importance. By referring to charts of the puppies in these experiments, it is evident that it may take a longer or shorter time to deplete the puppy on a vitamin-free diet, depending on the variation in the body stores of the vitamins in question of the puppies or dogs used in the experiments. To say that a product was used with several animals without nutritional disaster may or may not mean that it is completely adequate, as we have no way of determining the tissue storage of the animals that were used in the experiments.

There is every argument in favor of determining the dog's actual requirements of these factors by the use of synthetic diets with a consideration of the probably greater requirements of the larger breeds. Data on some of the vitamins, particularly vitamin A, have been included in these experiments. If such studies are made with puppies, the amount required by the older dogs of the same breed will probably be well covered, because of the apparently greater requirements of the growing puppy. Until such data are available for all of the vitamins it will be difficult to set up standards for commercial dog foods that are fair not only to the dog, but also to the honest producer of these products.

Summary

1. Nutritional experiments with 523 puppies are reported in which the close resemblance of vitamin deficiencies and distemper were studied.

2. The first experiments consisted of giving young puppies a diet to which liberal supplements of vitamin A in the form of carotene in oil were given, and in addition, dried yeast to supply vitamin B_1 and the vitamin B_2 complex, with the object of ruling out vitamin deficiencies, and giving more than the minimum amounts. Ten per cent of the dry weight of the food was given in the form of dry yeast. Carotene was used as a source of vitamin A activity because large doses can be given without toxic effects.

3. This attempt to rule out vitamin deficiencies was continued 30 to 60 days before the puppies were exposed, in the distemper ward of a veterinary hospital, to dogs that had been diagnosed as having distemper. No distemper was produced in the puppies so exposed.

4. Since the amount of carotene given was obviously much higher than the actual requirements, quantitative determinations of the requirements of growing puppies were considered desirable and were made using a synthetic vitamin-free bitches' milk.

5. Observations on the effects of vitamin A deficiency in puppies are reported. Some of the symptoms ascribed to distemper were noted without infections being present.

6. Using the synthetic vitamin-free bitches' milk, preliminary experiments in determining the effects of deficiencies of vitamin B_1, lactoflavin, B_6, and the black-tongue preventing factor were made with young puppies. Additional symptoms usually ascribed to distemper, or the effects of distemper, were noted without evidence of infections. In very young, newly-weaned puppies, death usually occurred without the appearance of the classical vitamin deficiency symptoms. Autopsy usually disclosed no macroscopic changes.

7. Fresh commercial distemper virus in the amounts usually administered for immunizing purposes was found to be ineffective in producing distemper in preliminary experiments with 13 puppies that had been given an excess of vitamins A, B, and B_2 complex.

8. A brief review of the substances of vitamin character known at the present time is given with particular reference to the dog.

9. It is concluded from these experiments that the symptoms of single or multiple vitamin deficiencies in the dog are often mistaken for canine distemper or the effects of distemper. The clinical picture is further complicated when both vitamin deficiencies and infections, either specific or nonspecific, are present at the same time.

Unfamiliarity with the many pathological disturbances in puppies and older dogs caused by vitamin deficiencies and experimentally reproducible without the presence of infections has resulted in the term "distemper" being used too broadly, i.e., "distemper" is commonly applied to three different conditions: (1) various single or multiple vitamin deficiencies; (2) vitamin deficiencies accompanied by nonspecific infections to which the susceptibility is increased greatly by the lowered resistance due to the deficiency; and (3) Carré's virus infection with or without complicating vitamin deficiencies.

10. The rather high mortality that exists today in puppies can be very greatly reduced by prophylactic measures to eliminate vitamin deficiencies. It is more simple to prevent vitamin deficiencies than to cure them in young puppies.

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I am very grateful to all of these persons for their cooperation, but absolve all of them from any responsibility for the interpretations I have placed upon the data.

The carotene used in these experiments was furnished through the courtesy of the S.M.A. Corporation.

[1] "Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Black Tongue," C. A. Elvehjem, R. J. Madden, F. M. Strong, and D. W. Wooley, J.A.C.S., 59:1767: 1937.

EDITOR'S NOTE—This is the eighth and last of a series of articles on Vitamins and Distemper, by the same author. Preceding articles appeared in the January, February, April, May, July, September and October issues. All eight discussions will be reprinted in a booklet and supplied at nominal cost to those who missed any of the preceding articles, or who wish to have the entire discussion conveniently available for study and reference.

Types of Cough in the Dog

There are certain types of cough in the dog which are almost pathognomonic of their exciting causes. First, there is the wheezy cough, somewhat resembling a forced expiration, which is associated with heart trouble and emphysema. It is often ascribed to cardiac asthma. It occurs when the dog starts to move about. If that movement is not too vigorous, it disappears. It reappers when movement stops, and is accompanied by varying degrees of distress.

Another cough is the hard cough which occurs on movement and keeps on. It tends to settle when the dog resumes his rest. This is generally due to lesions of the *Oslerus osleri* worm, which are to be found at the tracheal bifurcation.

In pleurisy, a short, hard, painful cough is often shown on movement.

In tuberculosis of the lung, the cough is again short. It tends to occur in short spasms with a retching action at the end.

In mediastinal growth, the cough is similar to that of *Oslerus osleri* cases, but it is softer in character.—*J. McCunn, Vet. Rec.*

Italy Will Breed Large Mules

The Italian government has decreed that, far from disappearing with the mechanization of the army, the number of mules is to increase greatly.

The Zootechnical Guild of the Fascist Corporative State says that "This necessity is particularly felt in a country such as ours which has vast and important mountain zones where artillery and food transport is best done with mules owing to the difficulties which automobile transport frequently meet with in those zones." The guild is to concentrate on breeding large mules.—*N. Y. Herald-Tribune.*

Drugs Used In Veterinary Medicine

V. COPPER AND ZINC

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Copper

Historical Sketch.—Copper was one of the earliest of the metallic elements known to the ancients. According to Berthelot, it has been mined for at least five thousand years. He found, by careful analysis, that most of the utensils and ornaments found in ancient Egypt were made of pure copper in place of alloys which have been found in other places. One cannot wonder at its early use, for it is found abundantly in its native form, both in the old world and on our own continent. The prophet Ezra and the poet Homer mention it in their writings. The Romans are reputed to have discovered it on the Island of Cyprus. These peoples called the metal "aes cyprium" whence the contracted term "cuprum" followed, and from this our English term "copper" is derived. A number of alloys of the metal were used in ancient times; for example "aurichalcum" or "golden copper," a combination of copper and zinc, recognized today as brass; and bronze (alloy of copper and tin) was also much used. Both of these combinations, it should be noted, were used before either zinc or tin were discovered.

Copper and its salts appear not to have been extensively used in early medical practice, but the Arabians are known to have employed "bluestone" or copper sulphate for its emetic properties and as a caustic. During the past century the double salt, produced by bluestone with ammonium carbonate and known as "ammoniated copper," was popular as an internal medicine for treating functional spasmodic conditions such as epilepsy, chorea and, more especially, croup. Verdigris was at one time a common cause of poisoning, especially when copper utensils were so much in use, but at present one seldom hears of poisonings from this type (copper carbonate) of toxic material. Though formerly given a more or less insignificant place in medicine, mainly external, today one finds that copper is gaining momentum because of some very recent discoveries of its place in blood regeneration.

Metallic Copper.—The metal itself, somewhat like silver, is known to affect lower organisms very readily, though it has been found more selective toward the green algae than the bacteria. It is a well known fact that ships lined with a copper covering on the outside of the hull are devoid of algal life, whereas the ship without such protection is heavily burdened with these organisms. For this reason modern boat paints usually contain copper powder. Much value has been assigned the metal as an antibacterial agent, but in less than 1:100 dilutions, it is not considered very efficient. It appears to kill typhoid organisms at this concentration, however.

There is a collodal form of metallic copper, called collosol cuprum (Crookes) (0.05%), which is used to ameliorate the pain of carcinomatous conditions. It is also used in place of the zinc salts for ophthalmic conditions such as follicular conjunctivitis, trachoma, etc. and is said to be non-irritant. At the above-mentioned strength it may be injected intramuscularly or dropped into the eye directly. It may also be administered orally. There is a related preparation of the metal in the form of collodal iron and manganese with 0.005% of collodal copper. It is chiefly indicated as a hematic and may be injected into the muscle or given orally.

Copper Sulphate or Bluestone ($CuSO_4 5H_2O$).—This salt occurs in the form of blue crystals or powder, freely soluble in water, but only slightly soluble in alcohol. Locally, in dilute solutions, it is astringent; but in concentrated form (crystals or sticks) it is distinctly caustic. For the latter purpose, one part of alum and two of the sulphate are fused together. For collyria it may be used in 1:1000 up to 1:100 solutions though the latter is quite irritant.

(The salt is incompatible with alkalies, alkali carbonates, iodides and tannic acid —the last-mentioned being indicated as one of the antidotes).

Copper sulphate is well known for its anthelmintic application in sheep, and sometimes in hogs. The 1% solution appears to be most popular for stomach worms, though recently there has been some advocacy of a 1½% strength. The 1% solution for drenching is made as follows:

Dissolve ¼-pound of clear blue crystals (not white or powdered material) in a pint of boiling water, and add enough cold water to make three gallons.

Prepare in an enamel or porcelain vessel, and store in glass.

This amount is sufficient for 100 sheep, with a 10% leeway for waste.

For a combination treatment against tapeworms and hookworms, in addition to stomach worms, for every three quarts of the copper sulphate solution, add one fluid ounce of a 40% nicotine sulphate. The recommended dose (once each month during the grazing season) is one ounce of solution for each 30-35 pounds of sheep or lamb; but not to exceed five ounces for any animal. The ewe of average size requires three and one-half to four ounces.

According to Willman and Grams (Cornell) the dose table is as follows:

	Weight	*Dose*
Lambs	40 to 60 pounds	1 ounce
Lambs	60 to 80 pounds	1½
Sheep	80 to 100 pounds	2 to 3
Sheep	over 100 pounds	3 to 4

Drenching the sheep is accomplished by means of a two or four-ounce dose syringe, or an eight-ounce bottle; or better, the solution is given through a stomach tube. The solution is measured carefully, and for drenching, the sheep is then backed into a corner and allowed to stand on all four legs. The syringe or the neck of bottle should be inserted into the mouth a short distance and the contents administered slowly. The head of the animal should not be elevated much higher than normal. Unless a stomach tube is used the danger of the drench entering the lungs is ever present and must be avoided. The sheep should not be fed or watered for 18 or 20 hours before, and for five or six hours after treatment. Strong solutions and overdoses often prove fatal. If the solution is of proper strength, agitated before being placed in the syringe or bottle, and kept from contact with metallic containers, it is safe.

Ewes may be drenched before the lambs are weaned. It is best not to drench ewes heavy in lamb, but one losing flesh because of stomach worms should be treated regardless of the stage of pregnancy. It is not advisable to drench animals under four weeks of age. In case of overdosing, give lots of additional water or a pint of milk.

Rietz (West Virginia) reports that the 1% copper sulphate treatment is from 50-75% effective against nematodes; and the 1½% solution is 95-98% effective against nematodes and entirely effective against cestodes. He also states that the copper sulphate-nicotine solution is as effective as the copper solution alone, but that nicotine sulphate solution alone is less effective than the combination and nauseated the animals. He also claims that the treatment is 20% more effective on animals starved 24 hours before treatment than on unstarved animals.

There are liquid anthelmintics on the market containing about 8% copper sulphate and 6% nicotine sulphate (blackleaf 40), which are considered very efficient. There is also one preparation intended for both hogs and sheep, containing 9% copper sulphate, 20% iron sulphate, areca nut and a purgative salt. This serves the dual purposes of a worm and anemia remedy.

Copper-Iron Therapy.—For many years practitioners have been endeavoring to solve the riddle arising from conflicting reports on the results of iron medication and its relationship to the blood. It was agreed early in this work that although the iron is valuable in stimulating the production of hemoglobin, this action can not be depended upon. It was not clear, until very recently, just why enormous doses of iron salts, in the purest form, were unavailable to the animal under treatment. The latest investigations carried on by nutritionists have indicated that the cure

of certain secondary and nutritional anemias depends not only upon the form of iron employed, but more especially upon the addition of small amounts of copper. It was in 1929 that Hart and his associates, at Wisconsin, used copper salts as a supplement to iron salts in the cure of milk anemia in pigs. A solution of soluble iron and copper salts (25 mgm of Fe and 5 of Cu) were given as the daily oral dose; and proved highly effective in curing the disease. Commercial iron (ferric) sulphate solution alone was also highly effective, but these workers have indicated that this apparent contradiction is due to the presence of copper contamination in the iron salt, without which the iron would be ineffective for hemoglobin regeneration. These workers also have shown that anemia is common in pigs only at three to six weeks of age. If they fail to contract the anemia before starting on solid feed, they rarely become anemic. Nor do late-farrowed pigs contract the disease when they have an opportunity to root in the soil and eat a small amount of green vegetation long before they ordinarily begin eating of the sow's feed. The explanation of these facts lies in the presence of iron and copper in the soil and in most feeds. Hart and Elvehjem (1932) have shown that the effect of small amounts of copper with ferric chloride in hemoglobin regeneration of rats, was over twice as great when organic iron was used. Greater refinement of experimentation has shown that a daily administration of 25 mgm. of iron pyrophosphate to 1 mgm of copper sulphate increases the hemoglobin content of blood to normal levels. From this type of careful work, it appears that iron therapy (with the help of copper) has been placed on a dependable and scientific basis. Copper has earned a new place in the limelight of veterinary medicine!

Copper Citrate.—This is an unofficial salt. It possesses the astringent and antiseptic properties of other copper salts, but this action is somewhat modified by its sparing solubility. It has practically the same application as copper sulphate. It is only slightly soluble in cold water, but much more so in hot alkaline solutions. There are two ointments on the market of 5% and 10% copper citrate strength.

Toxicology.—Copper poisoning occurs when sheep are drenched with too strong solutions of bluestone, or when animals have access to feed or pasture land contaminated with Bordeau mixture spray or other copper solutions. When taken in overdosage the soluble salts cause caustic or corrosive effects on the mucous membranes, producing a severe and often fatal gastroenteritis. Usually there is abdominal pain, nausea and vomiting (in carnivores), followed soon thereafter by purgation. There is great thirst and if the animal does not die promptly, jaundice occurs, since the copper salts cause degeneration of the liver.

On autopsy the abomasum and intestine of poisoned sheep are markedly inflamed. In horses, the respiratory apparatus is easily influenced, and there may be intestinal hemorrhage and great liver and kidney damage. Antidotes for the copper salts are potassium ferrocyanide and tannic acid, followed by milk of magnesia, and demulcents including milk. Stimulants such as strychnine or atropine may be given in case of collapse. Copper sulphate is usually recommended in the treatment of poisoning, by phosphorus, since it forms an almost inert copper phosphide, thus delaying absorption of the phosphorus.

Zinc

Historical Sketch.—Although the Romans were ignorant of metallic zinc in its free state, they combined the ores of this metal with copper to make a crude brass. Later, combination with tin furnished them with bronze, which they found to be a good substitute for iron, since it is quite strong and yet easier to shape into the many types of vessels and weapons which they required. In the days of Paracelsus (400 years ago), zinc sulphate was employed externally for its astringency and internally as an emetic, uses to which it is still put today. It was also the custom of the ancients to use zinc oxide ointment. During the eighteenth century much prominence was given to the oxide for its so-called "specific" effect in cases of epilepsy and other spasmodic afflictions, but such values have since been entirely disproved.

The chief source of the metal is found in zinc blende or sphalerite (the sulphide) which is known as "black jack" due to its dark lustre. Other sources of zinc are Smithsonite and calamine, which are native forms of zinc carbonate, the last-mentioned being most used. Though the zinc compounds have attained their place in medicine mainly because of their external application, it should be pointed out that just recently the method of administering insulin has been revolutionized due to a combination of protamine with insulin to which a small amount of zinc has been added. This discovery by the Danish workers (Hagedorn, Jensen, Krarup *et al*), in 1935, has meant much to human diabetics, since effects are prolonged and dosage reduced.

Soluble Salts of Zinc

Zinc metal is not used in medicine, but it contributes to the formation of two groups of salts, the soluble and the insoluble forms.

Zinc Sulphate or *White Vitriol* ($ZnSO_4.7H_2O$).—This salt comes in colorless crystals or white powder, very soluble in water, freely soluble in glycerin and insoluble in alcohol. It is incompatable with alkali carbonates, borax and tannic acid; and also with lead acetate, forming with the latter the so-called "white lotion". Zinc sulphate is very irritatingly astringent, unless properly diluted, and is caustic in strong concentrations. For ear infections it is employed for germicidal, as well as astringent, effects up to 4%; and in conjunctivitis it is usually limited to a range of 0.5 to 2% due to its irritant properties. The same strength solution is used for vaginitis, urethritis and balanitis in dogs. It has limited use as an emetic in animals that can vomit, for which purpose it is given well diluted. When emetic effects are sought, liberal rather than minimal doses should be the rule, lest absorption occur.

In human medicine, zinc sulphate has been used in the subcutaneous treatment of hernia. One or two minims of the following solution are employed in gradually increasing dosage over a long period of time (once a week for about three months):

Rosen's modification of Mayer's formula

Zinc sulphate	
Phenol (cryst.)	aa ℥i
Glycerin	℥iv
Aqua Cinnamoni	℥i
Fl. Pinus Canadensis Comp.	℥v
Distilled water	℥ii

Zinc Acetate $[Zn(C_2H_3O_2)_2.2H_2O]$.—This salt occurs in pearly, white crystals, freely soluble in water and alcohol. It is incompatible with alkali carbonates, borax and tannic acid. This drug has applications similar to those of the sulphate, but is considered more irritant and more toxic than the latter.

Zinc Chloride ($ZnCl_2$).—This is a white, granular powder or mass, deliquescent, very soluble in water and alcohol. Its incompatibilities are the same as those of zinc acetate. This drug is more active even than the two previously mentioned. It is sometimes used for its caustic properties in concentrated or pencil form or made into a paste with flour in 20% strength. It is applied in canker, fistula, shoe boil, bursate, exhuberant granulations, etc. It is also employed as an injection in fistulous tracts.

Zinc Phenolsulphonate (Zinc sulphocarbolate.—This is another soluble salt, similar to the sulphate, but less active. It is used internally for its astringent and antibacterial properties in typhoid conditions. It does not seem to have advantages over zinc sulphate.

Zinc Iodide (ZnI_2).—This is another soluble salt of zinc. It is caustic and germicidal, having the systemic action of the iodides. It has little application in veterinary medicine at present.

Zinc Permanganate $[Zn(MnO_4)_26H_2O]$.—This salt is unofficial. It consists of brownish-black crystals or masses, which are deliquescent, readily soluble in water and usually leave a slight residue after solution. Solutions decompose in air and should be tightly corked and kept in dark places. It should not be mixed with organic solvents such as alcohol. This salt is similar to potassium permanganate in properties, except that due to the zinc ion it is more astringent. It is also considered to be a good antiseptic. It is used mainly as

a douche or injection, in 1:4000 solutions, in treating urethritis, balanitis and related conditions.

Zinc Peroxide (ZnO_2).—This is another unofficial compound. Meleny has recently (1935) found it of value in ulcerations due to microaerophilic hemolytic streptococci and anaerobic infections. These organisms are rapidly killed or changed in the presence of zinc peroxide. This treatment has been used on the abdominal wall, as well as in several cases of foul-smelling abscesses of the perineum. Zinc peroxide is used as a suspension (5%) in pyrophosphate solution. The oxygen is liberated slowly over a period of several days, leaving the bland zinc oxide as a residue.

Insoluble Zinc Salts

Zinc Oxide (ZnO).—This is a fine white powder, insoluble in water or alcohol. It is an antiseptic and mild astringent widely used alone, or in combination with other substances, as a protective dusting powder and as a sedative substance in pastes and ointments. With boric acid, starch or bismuth salts it is useful in moist eczema. In the forms of zinc oxide ointment (20%), soft zinc oxide paste (25%), hard zinc oxide paste (25%), plain zinc paste (25%), salicylated zinc paste (25% with 2% salicylic acid), it is widely used to treat scratches, pruritic conditions, eczema, burns, and in general, small abrasions. It is present to the extent of 30% in common adhesive tape, rendering it antiseptic.

A new method of treating or removing warts has been adopted recently (1936). McAusland applies elastic adhesive tape (zinc oxide spread on emulsion of gelatin and rubber on cotton elastic bandage)—completely and tightly covering the area involved. The plaster is removed and the soft "mushy" epithelial *debris* scraped away with a blunt scalpel. The bandaging is continued until the whole wart disappears. Lessened blood supply and exclusion of air appear to be the main factors.

Prepared Calamine.—This is the substance obtained from a native form of zinc carbonate which has been heated; thus forming the zinc oxide. It is an impure form of zinc oxide, containing small amounts of ferric oxide, which gives it a pink color. It is insoluble in water. Its properties are practically identical with those of zinc oxide, over which it has no advantages. The following preparations are official: calamine ointment (17%), calamine liniment (8%) an emulsion of olive oil and lime water; calamine lotion (8%) a mixture of zinc oxide, glycerin and lime water with calamine, and compound calamine lotion (calamine lotion with 1% phenol). These preparations are widely used to soothe, protect and act as mild astringents for the acute inflammatory conditions of the skin mentioned under zinc oxide preparations.

Zinc Stearate.—This is a mixture of zinc stearate with variable amounts of zinc palmitate, corresponding to 14% of zinc oxide. It is fine, bulky, light, white powder, insoluble in water or alcohol. Its action is similar to that of zinc oxide, but its softness and unctuous texture render it more lubricant and soothing when used as a protective dusting powder. The one official preparation is zinc stearate ointment (35%), which has similar uses to those of zinc oxide ointment.

Toxicology

When zinc salts are absorbed in overdosage, there is a marked irritation causing vomiting (in animals that can vomit) and a general gastroenteritis. The spleen is often involved and there may be signs of renal degeneration. There is a great abdominal pain, profuse diarrhea and collapse. The zinc salts are changed in the digestive tract to the irritant chloride, which accounts for the inflamed condition of the mucous membranes found on necropsy. There is a great weakness of the limbs, usually accompanied by trembling.

In chronic zinc poisoning there is extreme emaciation and weakness, glycosuria and hyperglycemia, fatty degeneration of the liver, kidneys and pancreas. Treatment consists of administering alkaline carbonates, tannic acid, demulcent drinks such as milk, and general bland diet. The animal must be supported with stimulants, such as atropine or strychnine, during the weakness and collapse.

Abstracts

Treatment of Pharyngitis in Horses

Systematic examination of the guttural pouches and of the pharnyx by means of laryngoscopy and roentgen photography, and by manual palpatation from the oral cavity have demonstrated the presence of abscesses of the so-called subparotid and retropharyngeal groups of lymphnodes, and especially of that group which may be called "guttural pouch lymph nodes," in about 90% of the cases of pharyngitis in horses.[79]

The lymph nodes of the guttural pouches are situated between the mucosa of the guttural pouch and the posterior wall of the pharynx, above the arytenoid cartilage of the larynx, in the immediate vicinity of both guttural pouches and the pharynx.

Whenever these lymph nodes become infected and purulent, then a collateral edema develops in their vicinity. This produces a swelling of the pharynx, spreading over to the gutteral pouches and interfering with their essential function of facilitating the act of deglutition. The edema of the pharynx may become so prominent as to cause the inflamed mucosa to protrude over the larynx in the shape of a pad. If this development takes place bilaterally, then the pads meet in the center and obscure the view of the larynx entirely.

The abscesses themselves also penetrate toward the guttural pouches and finally suppurate in one or several places. The pus in the guttural pouches is discharged through the nasal ducts. All these proccesses can be observed in the pharynx and in the guttural pouches with the aid of the laryngoscope.

Thus, the purulent discharge in the course of pharyngitis originates, as a rule, in the suppuration of the lymph nodes of the guttural pouches. It is noteworthy that these abscesses cannot be demonstrated externally, either by inspection, or by palpation.

It is characteristic that in pharyngitis regurgitation takes place more commonly in the horse than in other animals. This may be explained by the interference of the abscesses of the lymph nodes of the guttural pouches, situated in the immediate neighborhood of the pharynx, with the act of deglutition. The abscesses interfere with the function of the pharynx. The inflammation immobilizes the posterior wall of the pharynx and prevents the proper occlusion of the pharynx toward the nasal cavity in cooperation with the soft palate.

The difficulty of deglutition is, therefore, occasioned by the abscesses of the lymph nodes, while the regurgitation is caused mainly by the lessened mobility of the posterior pharyngeal wall.

In regard to the etiology, the abscesses of the lymph nodes of the guttural pouches are caused by streptococci similar in resemblance to those causing strangles. In all probability pharyngitis of horses is a form of strangles. Cases of pharyngitis which are not caused or complicated by streptococcic infection are rare. Exposure to cold, mechanical, thermic or chemical stimuli may be the primary cause, but the susceptibility of the horse to streptococcic infection facilitates a secondary infection of the lymphnodes of the guttural pouches with streptococci.

There exists an essential difference between pharyngitis in horses and pharyngitis in dogs. The latter is characterized by inflammation of the tonsils, while pharyngitis in the horse is caused by inflammation of the lymph nodes of the guttural pouches. The difficulty of deglutition in the dog is caused by a stenosis of the transitional zone between the oral and pharyngeal cavity; in the horse, difficulty in deglutition is caused by the stenosis of the pharynx, occasioned by the abscess formation of the lymph nodes of the guttural pouches. In pharyngitis in dogs the dysfunction originates in the anterior part of the pharynx, while in pharyngitis of the horse the dysfunction originates in the posterior part of the pharynx. There exist also differences in the blood picture of the dog and the horse in pharyngitis.

[79] Wirth, D. 1934. Neue Erkenntnisse über das Wesen und die Behandlung der Angina des Pferdes. (Recent researches concerning the nature and treatment of pharyngitis in horses.) *Wiener Tierärztl Monatsschr.* 21:753-756.

On the basis of these findings treatment of pharyngitis in horses must be directed above all toward healing the abscesses in the lymph nodes of the guttural pouches. This may be accomplished by the local application of warmth, or the use of resorbent ointments. Very beneficial results have followed the use of radiation from a "Sollux" lamp, and the subsequent cushioning of the pharyngeal region.

After the abscesses have suppurated, the only treatment of choice is the irrigation of the guttural pouches. The sinking of the fever curve and the appearance of profuse amounts of pus through the nostrils are signs of suppuration. Suppuration and discharge of the abscesses may be speeded up by pressure upon the parotid region. When irrigating the guttural pouches, care is to be exercised to keep the head of the horse bent down low. If the pharyngitis is very stubborn to treatment, then the intravenous application of germicidal solutions or of streptococcic serum is indicated. Parenteral protein therapy is also very promising in these cases.

Purpuras and Hemorrhagic Phenomena

Most clinicians consider purpuras as symptoms rather than autonomic phenomena.[87] They attribute the trouble to inpoverishment of blood cells and thrombopenia, conditions, as everyone knows, which can exist without purpura. The authors attribute the hemorrhagic state to abnormal fragility of the capillary endothelium. In the course of infectious diseases where there is a hepatic deficiency the microbian toxins instead of being fixed by the liver are retained by the endothelium of the visceral and cutaneous capillaries. The endothelial barrier thus rendered fragile by the contact with the toxins no longer resist the introduction of new toxins: it loses its cohesion and allows the blood to seep through. When toxin production ceases, the endothelium closes up and the hemorrhages stop.

[87] Renaux E. and Alechinsky. 1937. Abs. *Annales de Médecine Vétérinaire* 82:4.

Antirabies Vaccination

The use of antirabic phenolized ether-vaccine, "Hempt," for post-infection vaccination of domestic animals came in vogue in Jugoslavia[88] in 1926. This vaccine was administered together with lipovaccine "Gonsalves," until the end of 1933. The dose for large animals (horses, cattle, mules) was 20cc of ether-vaccine during the first and second days and 20cc of lipovaccine on the third day. Animals of medium size (sheep, goats, dogs, pigs) received 10cc of ether-vaccine twice, and 10cc of lipovaccine once. Small animals, weighing eight pounds or less, received 5cc of ether-vaccine on two successive days, followed by 5cc of lipovaccine on the third day. During this period, of 2,905 domestic animals of various species were vaccinated after infection forty-seven (1.62%) died from rabies.

Since 1934 ether-vaccine alone has been used. Regardless of the severity of the bite, bitten animals receive, depending upon the size, 20cc, 10cc or 5cc of ether-vaccine for three successive days. During 1934 and up until 1936, a total of 2,910 domestic animals were vaccinated after infection. They included 132 horses, 482 cattle, 1,828 pigs, 278 sheep (and goats), and 190 dogs. Of these animals, 20 died of rabies, corresponding to an absolute mortality of 0.64%. Subtracting the animals which sickened within 14 days after the treatment, this leaves a reduced mortality of 0.34%. Thus, the mortality among the various species was as follows:

Horses, one (absolute mortality, 0.75%; reduced mortality, 0%); cattle, 12 (2.49%, and 1.67%); pigs, five (0.27%, and 0.05%); sheep, two (0.72%, and 0.36%); dogs, none.

In 234 cases observations concerning the seat of the wounds were made. Among those animals injured on the head, the absolute mortality was 8.59%, the reduced mortality, 4.09%. Among those injured on the legs, the mortality was 1.44% (absolute and reduced). Among those injured

[88] Aranicki, M., 1937. Post-Infectious Protective Vaccination of Domestic Animals Against Rabies in Jugoslavia (Trans. Title). *Veterinarski Arhiv.*, 7:461-472.

on the trunk, the absolute and reduced mortality was naught. Of those suffering from severe lacerations, the absolute mortality was 3.85%, the reduced mortality 0%. Of those suffering from less severe lacerations, the mortality was 5.29% and 2.95%.

The species of the attacking animal was known in 1,530 cases. Of these animals 85% were dogs, 12% pigs, 2% cattle and 1% comprised cats, horses, sheep and wolves.

Of the 20 animals that died in spite of vaccination, 19 had been bitten by dogs and one by an ox.

The vaccination was well tolerated in all cases. There was no postvaccinal reaction or paralysis.

The Incidence of Undulant Fever Among Danish Veterinarians and Veterinary Students

During five years seventeen cases of undulant fever[86] were observed among veterinary practitioners and veterinary students in Denmark. The younger practitioners and the older students (upper classmen) were always the victims. Older practitioners can be considered immune. As a consequence, it was recommended that the future practitioners be vaccinated before leaving college or at least before entering practice. Students engaging in practical work at college or during their vacations are admonished to take the precaution of avoiding the infection.

Animals and Chemical Warfare

The chances of an aërial gas attack lessen as the degree of protection against it increases.[88] In long distance operations of a raiding character the only gases now likely to be used are those of the blister group, of which the one best known to be effective is mustard (dichlorethylsulphide). Universal individual protection of animals seems to be impractical, but collective protection is necessary and feasible, provided preparations for it are made before the attack. There should be little difficulty in rendering up-to-date animal shelters gasproof, but the protection of animals not accomodated in these is a subject of greater difficulty which can best be dealt with by those thoroughly conversant with the potentialities of the war gases, with the animals to be protected, and with the diverse local conditions.

Brucella Reservoirs

Among domestic animals three degrees of susceptibility to brucella infection may be distinguished.[88] The infection may pass from the alimentary tract to the lymph nodes which are associated with it. Here the organisms usually perish after a time without creating observable lesions or symptoms other than the formation of agglutinins. Most, if not all, domestic animals appear to be susceptible to such invasions. Calves, chickens, dogs, and cats seldom suffer in any greater degree. In these cases it seems improbable that many of the invading organisms make their escape to menace susceptible species that may be associated with the infected animals. It should be remembered, however, that infective material, such as milk, may pass through the alimentary canal thus making the feces infective. In most species of animals the organisms sometimes localize in certain areas of predilection, giving rise to areas of necrosis and suppuration. Thus, *Brucella abortus* sometimes gives rise to purulent bursitis and orchitis in cattle, poll-evil, and fistulous withers in horses, and rarely, orchitis and epididymitis in dogs, and ovaritis in women. In those instances the organism escapes with the release of pus from the focus and undoubtedly constitutes a menace to susceptible animals, which it may reach. In some species, these organisms have a special predilection for the genital organs and tend to localize in the uterus, when fetal material is contained therein, and in the mammary gland. This is the case only in cattle, swine, goats, and sheep. In cattle

[86] Thomsen, A. Abs. *Annales de Médecine Vétérinaire*, 82:4 April, 1937.
[88] Williamson, G. 1937. A veterinary aspect of gas warfare. *Jour. Roy. Army Vet. Corps* 8:61-67.
[88] Hagan, W. A. 1937. The animal reservoirs of brucellosis. *Cornell Vet.* 27:14-20.

it is usually the bovine type that is involved, but both porcine and caprine types have been found. In swine, only the porcine type seems involved. In goats and sheep only the caprine type is found. In these instances the organism is usually discharged in great numbers with the uterine content at the time of, and for a few days after, abortion, and frequently it is discharged freely in the milk.

Coccidial Granuloma

Coccidial granuloma[90] is a disease of both man and animals. The infection has been demonstrated in 20 animals and 286 human cases were reported up to 1931. Geographically, the records show a concentration in central and southern California. The majority of cases has occurred in males between 25 and 55 years of age. The highest percentage of cases falls in the agricultural class involving contact with soil and its products. The impression is that infection in both man and animal is probably contracted through inhalation, and there is evidence that humans are infected through the skin as the result of injuries. No man-to-man, animal-to-animal, or animal-to-man transmission has ever been observed. Soil and vegetation are the most probable source of infection.

New Chlorine Disinfectant

Ecdolite fluid is a disinfectant and deodorizer containing 0.6% available chlorine. This disinfectant can be manufactured by the verterinarian possessing an E.C.D. single unit machine (obtainable from E.C.D. Ltd. Tonbridge, London, England). The apparatus is said to be reasonably priced, thus allowing the disinfectant to be produced very economically. In the experiments carried out by Hamilton[91] the disinfectant exhibited powerful germicidal and growth inhibitory action upon *Salmonella pullorum*.

[90] Coccidial granuloma. *Public Health Reports* 52:334-336.

[91] Hamilton, H. P. 1937. Some notes on the efficiency of home-made sodium hypochlorite as a disinfectant. *Vet. Jour.* 93:153-157.

Phosphorus Poisoning in Swine

A drove of pigs pasturing in a meadow which had been in the battle zone during the world war was observed to vomit and soon afterward die. Autopsy disclosed hemorrhagic gastroenteritis, pericardial petechia, fatty degeneration of the liver, and pulmonary edema. Chemical analysis of of the stomach contents of two of the pigs showed the presence of 92mgm. and 144-mgm. respectively of phosphorus per Kgm. of stomach contents. When the pasture was inspected, a number of rusted hand grenades, containing phosphorus, were found.[92]

Laryngotracheitis of Canaries

Karsten[93] describes a canary epizootic of a highly infectious nature; he believes it to be caused by a virus. The disease is easily transmitted to healthy canaries by contact, and also artificially with the exudate from the upper respiratory tract, but not with blood or tissue extract.

The epizootic presented certain similarity to streptococcosis, from which it differs, however, by the lesions in the respiratory tract. The author assumes that the canary epizootic under discussion forms the primary stage of streptococcosis, and the latter is merely a superimposition with streptococcic invaders.

Persistence of Streptococci in Milk Products

Investigation has shown that even where milk contains demonstrable numbers of mastitis streptococci and more than 500,000 leucocytes per cc., it can be made into satisfactory cheddar cheese though it may lack in normal curd-formation properties. This was accomplished by adding 1½ to 3% of starter or 30% HCl at the rate of 100cc. per 1,000 pounds of milk. The need of using a test like the Marschall cup

[92] Jonckheere, De. 1937. Phosphorus poisoning in pigs. (transl. title). *Vlaamsch Diergeneesk. Tijdschr.* 6:8-11.

[93] Karsten,—1937. Infectious laryngotracheitis in canaries. (Transl. title.) *Deutsche Tierärztl. Wochenschr.* 45:12-14.

[94] Marquardt, J. C., and G. J. Hucker. 1937. Methods of Making Chedder Cheese From Milk With a Low Curd Tension, Tech. Bul. No. 242; N. Y. Agr. Exp. Sta., Geneva.

test in making cheese from milk whose curd tension varies from normal was shown.

It was found that after nine months of curing, *Streptococcus agalactiae* were present in cheeses made from milk with a low curd tension. Milk of abnormal composition produced by cows with acute mastitis should not be used for cheese making.

Vaccines Fail In Mastitis

Vaccines prepared from stock and from freshly isolated strains of *Streptoccus agalactiae* and used on 45 cows over a 2-year period with 57 controls gave no evidence of increasing the resistance of dairy cattle to mastitis.[95] Similar vaccines had little or no therapeutic action in the treatment of latent and chronic mastitis; nor was the prophylactic or therapeutic action of the vaccines stimulated by the use of simultaneous intramuscular injections of milk.

Irradiated Yeast and Mastitis

The feeding of irradiated yeast was found to have no significant effect upon the resistance of the udder to the invasion of mastitis streptococci in tests carried on with 116 cows in four herds over a 2-year period.[96] Depending upon the index of infection used, from 10 to 13% more of the infected yeast-fed cows showed an improvement than was found in the case of the infected cows not fed yeast. No prophylactic effect was found by the addition of irridiated yeast to the diet of mastitis-free cows.

Treatment for Filariasis in a Dog

A dog suspected of suffering from piroplasmosis had a temperature of 103.6° F. An eczema existed over the eyelids and the body. Examination of blood smears revealed the presence of microfilariae.[97]

Treatment consisted of intramuscular injection of 6cc. antimosan (1cc. for each 10 lbs. of body weight). This dose was repeated five times at intervals of four days. After the fifth injection no filariae could be detected in the blood.

Temperature measurements by means of thermocouples implanted into the visceral organs give no evidence, according to Hamilton, to support the claims advanced in the literature of differences in the temperature of the various abdominal organs.

Book Reviews

The Technic of Local Anesthesia. By Arthur E. Hertzler, Professor of Surgery in the University of Kansas. Sixth edition; cloth bound; 284 pages; 142 illustrations. The C. V. Mosby Company, St. Louis, 1937. $5.00.

This work deals with anesthesia from the viewpoint of the medical practitioner. Nevertheless it may be recommended to the veterinarian who wants to improve and refine his technic.

The work comprises 25 chapters. Chapter one deals with the pharmacology of the drugs used in anesthesia; directions for making solutions, and the comparative toxicity of the drugs. Chapter two deals with apparatus, the needles, syringe, container for the anesthetic solution, sterilization of the apparatus, general and special preparation of the patient, preliminary infiltration, endermic injection, subdermic infiltration, nerve blocking, perineural injection, edematization, and the sequence of endermic infiltration and nerve blocking. Chapter three, referring to minor operations, explains the opening of abscesses, the removal of tumors, the search for foreign bodies, skin grafting, and the suturing of wounds. Chapters four to twenty-four outline regional anesthesia including paravertebral and splanchnic anesthesia, sacral blocking. Indications and contra-indications are thoroughly discussed. The concluding chapter deals briefly with intravenous anesthesia.

[95] Hucker, G. J., and Paul Arne Hansen. 1937. Mastitis: VIII. The Use of a Specially Prepared Vaccine in an Attempt to Control Bovine Mastitis, Tech. Bul. No. 245; N. Y. Agr. Exp. Sta., Geneva.

[96] Hucker, G. J., and Marion Snyder Reed. 1937. Mastitis: VI. The Effect of Feeding Irradiated Yeast on the Resistance of the Udder to Mastitis; Tech. Bul. No. 243; N. Y. Agr. Exp. Sta., Geneva.

[97] Kaka, A. G. 1937. Antimosan in a case of microfilaria in a dog. *Ind. Vet. J.*, 14:60-61.

Experimental and Clinical Studies of the Spine of the Dog, by Geoffrey Bernard Brook, D.Sc., F.R.C.V.S., Centenary Post-Graduate Research Fellow, Royal (Dick) Veterinary College, Edinburgh, 1927-1928. 122 pages, 50 illustrations. Published by Wm. Wood & Co., Baltimore, 1937. Price $2.00.

The work embodied in this thesis was carried out in 1927 and 1928 during the tenure of the Centenary Post-Graduate Research Fellowship of the Royal (Dick) Veterinary College, Edinburgh. The thesis was accepted in partial fulfillment of the requirements for the Degree of Doctor of Science in Veterinary Science of the University of Edinburgh in 1933.

It is divided into two parts. The first part deals with anatomic investigations of the atlanto-occipital space in its relation to the puncture of the cisterna magna. It is found that the depth of the cisterna at the foramen magnum is 0.5cm in large dogs and 0.3cm in small dogs. The average amount of cerebrospinal fluid obtained was 5cc. The white cell count increased with repetition of the punctures. Sixty dogs of different breed and age were used. Examination of the cistern in the living dog was carried out in three instances to observe leakage through perforation, the movements of the medulla and also the effect on the depth, of holding the head in different positions. The technique of this should be of value to the clinician engaged in the diagnosis and treatment of spinal diseases of the dog. According to this author the spinal cord in the adult dog terminates about the level of the articulation between the sixth and seventh lumbar vertebra.

The second part of the book deals with the effects of an iodized oil containing 0.54gm of iodine per cc. It is a radiopaque medium which is easily tolerated by the dog and which may be used to show location of a spinal block. Lesions of spondylitis deformans were found during the preliminary examination of two of the experimental dogs. It was also observed that after injection in the cisterna magna it took about 110 minutes for the iodized oil to descend into the subarachmoid culdesac. A consideration of certain features in x-ray protographs of the spine of the dog form the appendix of the work. The characters of x-ray shadows cast by certain associated or superimposed structures are fully covered.—*H. J. Mostyn.*

* * * *

Klinische Diagnostik der Inneren Krankheiten der Haustiere. (Clinical Diagnostics of the Internal Diseases of Domestic Animals.) By Malkmus-Oppermann. 12th edition; 277 pages; 75 illustrations, and 1 table. Published by Dr. Max Jaenecke, Leipzig, Germany, 1937. $2.50.

The previous German edition of this work appeared in 1933 and was translated into English in 1936, by Dr. John R. Mohler and Dr. Adolph Eichhorn. A review of the translation appeared in the January, 1937, issue (page 56) of VETERINARY MEDICINE. The new German edition has been brought up-to-date by various additions to individual chapters, increasing the size of the book by 13 pages.

* * * *

Genealogy of Sex, by Curt Thesing, M.D., translated from the German edition by Eden and Cedar Paul; introduction to the American edition by Smith Ely Jelliffe, M.D. 286 pages, 73 illustrations. Published by Emerson Books, New York, 1937. Price $2.95.

Doctor Thesing has contributed many works on this subject, among them "Propagation and Heredity," "Laws of Propagation and Experimental Biology." Genealogy of Sex is a detailed survey of all forms of love life, from that of the primitive unicellular animal to man. It contains many curious facts. Thesing presents this manual of biological phenomena in a style that is readily understandable to anyone, and his audience of students of natural science will find valuable data on animal psychology, even though this book deals with but one aspect of animal behavior, albeit the most fundamental.

It can be designated as a story of the many interesting developments of sexual processes. It gives us a new wonder, not merely at the amazing creations of Nature, but the fortitude of such investigators as this author who records, with skill and scientific exactness, the findings made to date on sex in its myriad forms.—*H. J. Mostyn.*

The Physiology of Domestic Animals, by H. H. Dukes, D. V. M., M. S., Professor of Veterinary Physiology, New York State Veterinary College, Ithaca, New York; with a chapter on The Physio-Chemical Basis of Physiological Phenomena, by E. A. Hewitt, D. V. M., Ph. D., Associate Professor of Veterinary Physiology, Division of Veterinary Medicine, Iowa State College; a part on Reproduction, by G. W. McNutt, D. V. M., as revised by S. A. Asdell, M. A., Ph. D., Professor of Animal Physiology, New York State College of Agriculture; and a Foreword by H. D. Bergman, D. V. M., Professor of Veterinary Physiology and Pharmacology, Division of Veterinary Medicine, Iowa State College. 695 pages, 167 illustrations, fourth edition. Comstock Publishing Co., Inc., Ithaca, N. Y., 1937. $6.00.

The three preceding editions of this excellent veterinary physiology have been reviewed in this magazine as they appeared. Instead of a review of the present edition, which would, of necessity, be to a considerable extent, a repetition, a review of the work which appeared recently in *Revue de Médicine Vétérinaire,* and which shows its cordial reception in Europe, is appended.

In the absence of a French manual of physiology destined to complete the "Elements de physiologie" of Laulanié, the Physiology of Domestic Animals by H. H. Dukes can be read with a great deal of interest and profit by all whom physiology interests in any respect whatsoever.

The author divides the book in 11 parts and 40 chapters, each part being followed with a complete bibliographic index. It is unnecessary to emphasize that the greater part relates to the work of Americans and that the author ignores French references, which is no different than other foreign works.

In the preface H. D. Bergman, professor of physiology and pharmacodynamics in Iowa State College introduces the book of his student and colleague H. H. Dukes, and recommends it at the same time to students and practitioners.

The introduction contains a chapter by E. A. Hewitt, associate professor of physiology in the Iowa State College that treats of the physico-chemical bases of physiological phenomena. Questions related to osmotic pressure, dialysis, reaction of the media, equilibrium of Donnan, the collodial state, imbibition, absorption and superficial tension are exposed. Then there is a study of organic liquids: blood, lymph, cerebrospinal fluid. In regard to the blood in particular, one must point out the paragraphs on the regulation of pH, the origin of blood cells and their fate, the physiological study of hemolysis and of coagulation. All of these questions are treated in a concise fashion and they conform to modern researches.

In the second part, consecrated to the circulation of the blood, there is an interesting paragraph on the coronary circulation, another on the clinical methods of measuring blood pressure and finally a chapter on the vasomotor system.

Regarding the physiology of digestion, one finds a chapter on gastric digestions of ruminants and a paragraph on the movements of the intestines.

The question of metabolism which includes regulation of body heat merits particular attention, for here is presented in concise form the new and essential elements of basal metabolism, the nutritive value of ammoniacal salts and amines, the degredation of amino acids and fatty acids in the organism, the action of insulin in the metabolism of glucose and a special paragraph is reserved for the question of vitamins.

But the most interesting part for veterinary clinicians is the one that treats of the endocrine glands and the physiology of reproduction. The latter is written by G. W. McNutt, one of the author's collaborators and is a well documented treatment of the subject of reproduction of the domestic species and of the importance of the subject. If the points brought out on reproduction abound, all of the studies are oriented toward human physiology. At the beginning there is a synoptic tableau of the estral cycle of the domestic animals giving the number of cycles per year, the duration of the cycle, the duration of estrum and the moment of ovulation. The author then studies the physiology of the ovary in its relation to the estral cycle in the different species, the physiology of the uterus, of the placenta, of the nutrition of the fetus, the fetal circulation, the physiology of the amniotic and allantoid fluid and finishes with the hormonic correlation of the ovaries and the other organs particularly the mammae. After this study of the female organs a chapter is devoted to the organs of the male: testicles, epididymus, vas deferens, seminal vesicles, prostate and bulbourethral glands. The chapter ends with a study of the physiology of coition and insemination.

In résumé, the book which brings out recent knowledge of physiology and which is written in a concise form by a sympathetic spirit, is an excellent manual of veterinary physiology useful as well to the student of our schools as for the practitioner. It has one inconvenience; one must know English.—*M. Pierre.*

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HOW FAR HAVE WE COME?

"In making a march, it is well to pause occasionally and observe the route both ahead and to the rear." That's how Army Field Service Regulations put it. At this time of year, we too may follow this advice. Now when the tuberculosis Christmas Seals make their annual appearance, we,

True Christmas Cheer . . .

Help to Make Others Healthy

The National, State and Local Tuberculosis Associations of the United States

as citizens, should acquaint ourselves with what has happened in the fight against this dread disease—and what lies ahead.

For thirty years a voluntary army has mustered itself for duty in raising funds with which to carry on educational work in the public health field of tuberculosis control to the end that a preventable and curable disease may be conquered. The march has been along a well-defined route starting with Koch's discovery of the tubercle bacillus in 1882 and past such important milestones as the building of the first turberculosis sanatorium by Dr. Edward L. Trudeau and the inauguration of the first Christmas Seal sale by Miss Emily P. Bissell in 1907.

For thirty years the battle has been waged, with ups and downs, until now we can see victory ahead. We must keep on. It is not enough that we have made progress to the extent of reducing the deaths from tuberculosis by more than two-thirds. There are still almost 70,000 people needlessly dying each year, and most important, the majority of deaths occur in that age group, 15 to 45, which is right at the door of economic independence and stability.

We can't all be up in the front line of fighters but we do all have the privileged opportunity of supporting the soldiers on the march. We can buy and use Christmas Seals. They finance the greatest war the world has ever known—a war that shall go on until the ancient enemy of mankind is wiped off the face of the earth.

A long way have we come. We can look back with satisfaction but we must look ahead with determination and with confidence in the tuberculosis associations of the country who have led the fight.

Let's all buy Christmas Seals this year and help in this great fight.—*C. L. Newcomb.*

MISS GILTNER KILLED

Miss Elizabeth Giltner, 25, daughter of Dean and Mrs. Ward Giltner, East Lansing, Michigan, was shot to death in her home, December 8th, as she sat at the dining room table addressing invitations for her wedding to Capt. D. S. Babcock, a field artillery officer attached to the Michigan State College R.O.T.C. The wedding was to have occurred December 12th.

Miss Giltner was slain by an intimate friend of many years, Hope Morgan, also of East Lansing. Miss Morgan's comment to the police was: "I don't know why I did it. I really don't know why."

ARMY VETERINARY SERVICE

Captain Edgerton L. Watson is relieved from his present assignment and duty at San Francisco port of embarkation, Fort Mason, Calif., effective at such time as will enable him to sail on the transport scheduled to leave San Francisco, Calif, on or about March 12, 1937, for the Hawaiian Department, and upon arrival will report to the commanding general for assignment to duty with the Veterinary Corps.

Major Harry E. Van Tuyl is relieved from duty at Fort Hamilton, N. Y., effective at such time as will enable him to proceed to New York N. Y., and sail on or about March 18, 1937, via Government transportation, for the Philippine Department, for duty.

Captain Ernest E. Hodgson is assigned to duty at Fort Ringgold, Texas, effective upon completion of his present tour of foreign service in the Hawaiian Department.

Major Frank C. Hershberger is assigned to duty at Fort Hamilton, N. Y., effective upon completion of his present tour of foreign service in the Philippine Department.

1st Lts. Velmer W. McGinnis and Lloyd C. Teske are directed to proceed from Washington, D. C., to Carlisle Barracks, Pa. and report on December 30, 1936, to the Commandant, Medical Field Service School, for temporary duty for a period of approximately five months for the purpose of pursuing the basic course of instruction.

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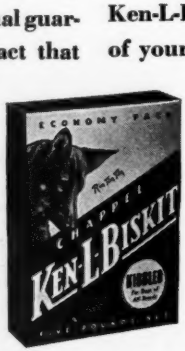
● **VETERINARIANS who visit our plant at Rockford are keenly interested when shown the ingredients which go into every batch of Ken-L-Biskit. They see FRESH WHOLE MILK (not dry skim milk), FRESH RAW MEAT (not scrap or waste "meat"), EGG YOLK and other pure, fresh, wholesome ingredients placed into the dough-mixing machine.**

And there is an additional guarantee of quality in the fact that the fresh raw meat used in Ken-L-Biskit is from healthy animals that have been inspected and passed by trained inspectors from the U. S. Department of Agriculture.

After seeing these fresh, pure ingredients, it is no surprise to veterinarians to know that Ken-L-Biskit does more for the animal body. They SEE the actual RESULTS of feeding Ken-L-Biskit in the Chappel Kennels.

Ken-L-Biskit, like Chappel's Ken-L-Ration is made to the highest standard of quality and, like Ken-L-Ration, it is a food worthy of your recommendation.



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FEWER HORSES AND MULES ON FARMS

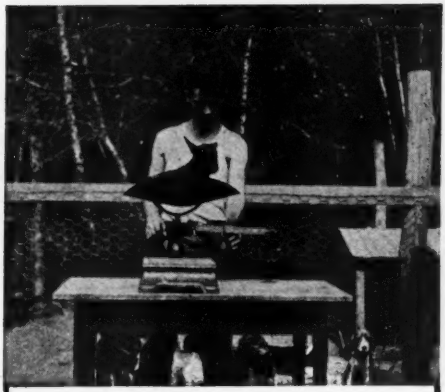
A further decline in the number of horses and mules on farms during 1937, and for several years to come, is forecast by the Bureau of Agricultural Economics in its Annual Outlook Report on these work animals.

The bureau, in its summary, said that "it is expected that the low point in the downward trend in the number of all horses and mules on farms will be reached in four or five years.

"The low point in the number of animals of work age will occur a few years later," the report continued. "During this period prices of horses and mules are expected to increase somewhat above present prices.

"As the number of horses and mules continues to decline, a further switching from the use of horses to the use of tractors is to be expected. Reports from the leading horse and mule markets indicate a continued strong demand for horses and mules, which is expected to be continued during the coming year.

"The extent to which tractors displace workstock in the next few years will not only affect prices for horses but will influence the number of animals needed for power on farms. With the non-farm outlet for work stock practically gone, and with large acreages of new lands for agricultural purposes no longer available, the need for work stock in the future will be much more limited



Scene at Tioga Experimental Kennels. Here over 150 dogs and 500 Albino rats are being used constantly for experiments in canine nutrition.

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The combination of these two elements has produced in TI-O-GA a dog food that has whelped and sustained in complete health six generations of bloodhounds—a record, we believe, unequalled by any other dog food. And it has produced a dog ration that has met with the unqualified approval of leading veterinarians throughout the country.

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than was the need for many years prior to 1918, when horse and mule numbers were increasing rapidly.

"Perhaps the maximum number needed for farm use is little different from the number now on farms. However, the need of replacing many old horses with younger animals is a factor tending to increase colt production. Demand has been principally for young animals, and especially for young mares suitable for both work and breeding."

ILLINOIS MEETING

The next meeting of the Illinois State Veterinary Medical Association will be held in the Abraham Lincoln Hotel, Springfield, Illinois, February 18-19, 1937. C. C. Hastings, Williamsville, Ill., secretary.

CALIFORNIA VETERINARY EXAMINATION

The California State Board of Examiners in Veterinary Medicine will hold its next examination for license to practice, January 4, 5 and 6, 1937. The examination will be held at the University Farm Davis, Calif. The personnel of the Board are: Drs. L. O. Henrich, president; L. G. Clark, vice-president; C. U. Duckworth, and N. E. Clemens, Hayward, Calif., secretary.

The Thirteenth Annual Short Course will be held at the Alabama Polytechnic Institute, Auburn, Alabama, from February 8-13, 1937.

The Missouri Short Course will be held at the University of Missouri, Columbia, on January 26, 27, 28, 1937. This Short Course will be held under the joint auspices of the University of Missouri Department of Veterinary Medicine, and the Missouri Veterinary Medical Association.

ILLINOIS VETERINARY MEETING

The next annual meeting of the Illinois Veterinary Medical Association will be held in Springfield, February 18 and 19, 1937. Officers of the organization are Dr. J. R. Brown, Ottawa, president; and Dr. G. W. Jensen, Antioch, vice-president. The committee on local arrangements for this meeting are as follows: Dr. W. B. Holmes, Springfield, chairman; Dr. C. C. Hastings, Williamsville; Dr. A. E. Dickerson, Springfield; Dr. E. E. Sweebe, Chicago; and Dr. A. E. Bott, East St. Louis.

PUBLIC HEALTH MEETING

The American Public Health Association announces that its 66th Annual Meeting will be held in New York City, October 5-8, 1937. The 65th Annual Meeting took place in New Orleans in October. It attracted an attendance of 1650 health authorities representing 45 states, Canada, Cuba, Mexico and nine other foreign countries. The officers of the Association are reminding themselves of this registration in a state where the membership numbers less than 100 and asking themselves what the registration will be in New York City where the membership counts up to nearly 500 within the city limits alone. An overnight's ride will enable more than one-half of the Association's 5000 members to attend the convention. The National Organization for Public Health Nursing will meet with the American Public Health Association in 1937 for the first time. This large and important organization is expected to add another thousand to the registration lists. The following related societies will meet with the Association as usual: The American Association of School Physicians, International Society of Medical Health Officers, Conference of State Sanitary Engineers, Conference of State Laboratory Directors, Association of Women in Public Health, Delta Omega.

A TRIO OF VETERANS

Charles Gibbs, Edmonton, Alberta, blacksmith, always wanted to be able to shoe a horse when he was 90 years of age, and has done so. He came out of business retirement to shoe 100-year-old Joseph Haire's 30-year-old mare, Nelly.—*Miniota Herald.*

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Hemo-Ration is a high meat content product and besides this, it also contains glandular organs, and fresh blood, fresh whole milk, cereals and cod liver oil.

Hemo-Ration is recommended to be fed to dogs requiring a highly nutritive food without the necessity of feeding the usual amount of food. This would apply particularly to a female in whelp, the nursing female (especially in the early days of lactation), the poor feeder and the convalescing dog such as those recovering from an attack of distemper.

***DISTEMPER*—Poor assimilation and a low metabolism following an attack of distemper calls for a diet to which the animal will readily respond. HEMO-RATION has been fed, with gratifying results, to animals recovering from the ill-effects of distemper.**

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ARMY VETERINARY SERVICE

First Lieutenants James B. Nickols, John H. Rust, Bernard F. Trum, Daniel S. Stevenson and Andrew J. Sirilo were relieved from assignment at the Army Veterinary School, Dec. 30, 1936, and assigned to Ft. Meyer, Va., Ft. Benning, Ga., Ft. Oglethorpe, Ga., the Philippine Department, and Ft. Mason, Calif., respectively.

Major Gardiner B. Jones is relieved from duty at the Presidio of San Francisco, Calif., effective at such time as will enable him to sail on the transport scheduled to leave San Francisco, Calif., on or about April 9, 1937, for the Philippine Department, and upon arrival will report to the commanding general for assignment to duty with the Veterinary Corps.

Major William H. Dean is assigned to duty at the Presidio of San Francisco, Calif., effective upon completion of his present tour of foreign service in China.

Major James E. Noonan is assigned to duty at Fort Belvoir, Va., effective upon completion of his present tour of foreign service in the Philippine Department.

The appointment of the following-named first lieutenants of the Veterinary Corps Reserve as first lieutenants in the Veterinary Corps, Regular Army, with rank from November 30, 1936, and their assignment to stations as indicated after their names, are announced:

Fred Lewis Herring, United States Military Academy, West Point, N. Y.

Wayne Devere Shipley, Fort Reno, Okla.

Clinical Effectiveness Has Established

Trade AZAMINE Mark

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Contains ammonium chloride, potassium chlorate, belladonna, guaiacol and glycyrrhiza in medicinal amounts per dose.

From the Trivial Throat Irritation to the Grave Broncho-Pulmonary Disease it is Medication in Fact.

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Excellent in canine medicine

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Termination of assignment to CCC. — First Lieutenants Densil Clyde Bartlett, Hq. Dist. No. 4, CCC, Richmond, Va.; Everett J. Siemer, Silver City Dist., Silver City, N. M.; Wayne Devere Shipley, Ft. Benning, Ga.; Walter Smit, Ft. Leavenworth, Kans. and Capt. Fred M. Burkey, Lufkin Dist., Lufkin, Tex.

John Von Henry Schantz, 45, died at the Jefferson County Hospital (Fairfield, Iowa) December 6, 1936, following an operation for appendicitis. Doctor Schantz entered the Veterinary Corps of the Army soon after his graduation from the Veterinary Division of the Iowa State College in 1917 and served overseas. Immediately following his discharge from military service in 1919, he began practice in Fairfield, Iowa, which he continued to the time of his death. He is survived by his widow, a son, a daughter, his father, three sisters and five brothers.

Dr. Naylor's Medicated Teat Dilators

A safe and dependable treatment for Spider Teats, Scab Teats, Cut and Bruised Teats, Obstructions and for keeping teat canal open after operating.
Dr. Naylor Dilators fit either large or small teats without overstretching or tearing, are easy to insert and stay IN the teat. They carry antiseptics and healing agents into teat canal to combat infection and promote healing. The dilators themselves are Sterilized, Soft, Absorbent dressings which protect the inflamed area, absorb inflammatory exudates and keep teat canal open in its natural shape while tissues heal.

Price to Veterinarians

Dollar Package (contains 48 Dilators).....$8.00 Per Doz.
Fifty Cent Package (contains 18 Dilators)..... 4.00 Per Doz.
Plain Dispensing Package (contains 15 Dilators)..... 3.00 Per Doz.

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KEEP THEIR STRENGTH. DOSE NEVER VARIES. WILL NOT BECOME BRITTLE. FIT THE GUN.

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the standard for four years for efficiency, convenience, and the perfect elastic gelatin capsule shell. Torpedo Mass Bot Capsules are not intended to replace Torpedo Liquid Caps.

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Grover C. Stong, 52, died at his home in Waterloo, Iowa, December 1, 1936, as a result of a heart attack. Doctor Stong was graduated from the Veterinary Division of the Iowa State College in 1909 and had been a member of the Bureau of Animal Industry for 23 years at the time of his death. He is survived by a widow, a son and a daughter.

Mrs. Nellie Ficklin Connaway, wife of Dr. J. W. Connaway, died at her home in Columbia, Mo., on Dec. 17. Mrs. Connaway spent her entire life in Columbia, having been born at Christian College while her father, Prof. Joseph A. Ficklin, was a teacher there. She is survived by her husband and one daughter. Dr. Connaway has been connected with the Missouri Agricultural Experiment Station since its establishment approximately fifty years ago, serving for many years as chairman of the Department of Veterinary Science.

One effect of the deficiency of vitamin B alone is a vascular dilation that slows the heart. But indirectly vitamin B deficiency coupled with vitamin A and vitamin C deficiency, may be a factor (along with iodine deficiency) in causing hyperthyroidea with its accompanying racing heart.—*Vitamin News.*

QUITMAN SUCCUMBS TO CANCER

Dr. Edwin L. Quitman, Chicago, died February 13, 1937, after an illness of several months.

Doctor Quitman was graduated from the Chicago Veterinary College in 1891, and served that institution as Professor of Materia Medica and Therapeutics for 25 years and until it ceased operations in 1920. He was the author of the most widely used Materia Medica and Therapeutics in this country, and for more than 40 years, was a frequent contributor to veterinary periodicals.

He had practiced in Chicago for 46 years, engaging in general practice until about 15 years ago, when he changed to small animal practice exclusively.

About eight years ago, Doctor Quitman was operated upon for carcinoma. Although his life was despaired of for several weeks, he recovered after about nine months to a sufficient degree to take care of his practice until last fall, when his old enemy practically incapacitated him.

Doctor Quitman's acquaintance was extremely large, both personal and by correspondence. For 40 years, he took an active part in the A. V. M. A., the Illinois and the Chicago Veterinary Societies, having been a charter member of the latter at its organization in 1895. He was a popular speaker on state veterinary association programs and appeared on such programs and at veterinary conferences from coast to coast and in northern, central and southern states.

Doctor Quitman was born in Texas, 68 years ago, but had lived in Chicago since childhood. He is survived by his widow and a sister.

EXPERT ON THE DISEASES OF CAGED ANIMALS DIES

Charles Victor Noback, for the past ten years veterinarian of the New York Zoological Park, died of pneumonia, January 16, 1937. Doctor Noback was graduated from the New York State Veterinary College at Cornell University, in 1911, and was president of the alumni association of the college at the time of his death. Following his graduation, Doctor Noback was employed by the Bureau of Animal Industry for two years, and then by the New York City Department of Health for eight years. Following this, he was employed by the National University of Bogata, Columbia. Returning to Cornell University, he received the Ph. D. degree in 1925, and shortly thereafter joined the staff of the Bronx zoo, where at times he had under observation as many as 4,000 animals. He was a frequent contributor to veterinary and other scientific literature, and a member of many scientific societies. Doctor Noback is survived by his widow, two sons, a daughter, a brother and a sister.

WAR ON CANCER

As the various menaces to man's health and happiness reach a stage where a frontal attack on them is possible a mobilization of our resources against them is inevitable.

Tuberculosis, blindness, maternal health, child welfare, crippled children, The American Red Cross are names or phrases which offer a welcome challenge to public spirited and sympathetic men and women all over the United States.

The most recent group to mobilize its strength against a great and cruel scourge is the Women's Field Army of the American Society for the Control of Cancer. This nation-wide organization of the women of America will conduct a steady and relentless war to save human life. It is the kind of happy wholesome fight against fear and ignorance in which everyone can and should willingly take part. It has the approval of the American Medical Association.

The enemy is a cold and subtle killer which last year took more than 140,000 lives in the United States alone. It has been estimated that there are between three and five hundred thousand sufferers from this disease alive today. Possibly one-half of them might be saved if knowledge of the symptoms which may mean early cancer were given to them and if they were also strengthened by courage to act on that information without delay.

The fight will last long and will require both courage and patience. It must be a matter of personal responsibility undertaken willingly in memory of those who have suffered and for the protection of the hundreds of thousands who need no longer suffer. No one is so busy that he can afford to neglect his part in the united effort to check the silent inroads of a cruel killer.

FIGHT CANCER WITH KNOWLEDGE

... Under this slogan the women of America are uniting in the first national campaign to fight cancer and its allies, fear and ignorance. Cancer can be cured if discovered in time. Perhaps as many as half the 140,000 persons who die of it each year can be saved by the spread of truth and knowledge.

March with us in this great Crusade!

WOMEN'S FIELD ARMY
American Society for the Control of Cancer
1250 Sixth Avenue, New York City

WHAT YOU CAN DO TO HELP. Enlist in the Women's Field Army. Send $1 to the American Society for the Control of Cancer today.

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KEEP A CASE OF HEMO-RATION ON HAND AT ALL TIMES

HERE'S WHY: In cases such as the female in whelp, the nursing female (especially in the early days of lactation) the poor feeder and the convalescing dog, you demand a highly nutritive food—one that you can feed in lesser amounts—and one that is easily digested.

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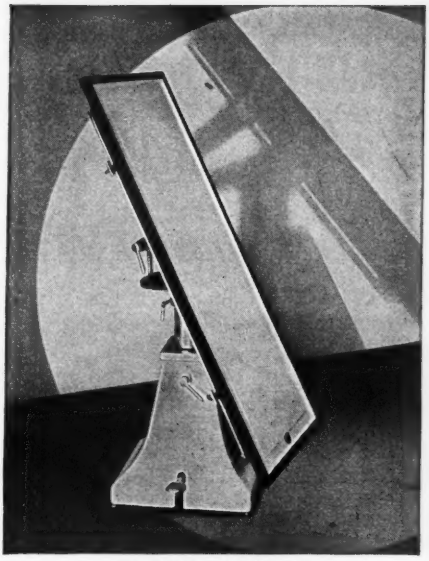
Try HEMO-RATION once and you will never be without it. Take advantage of our special offer now of a Free Practical Sample of HEMO-RATION to any veterinarian.

At the annual meeting of the Iowa Veterinary Medical Association, held at Des Moines January 19-21, 1937, the following officers were elected: President, James C. Carey, West Liberty; first vice-president, K. H. Gubser, Adel; second vice-president, A. C. Anderson, Centerville; secretary-treasurer, (reelected) C. J. Scott, Knoxville, and executive board member, P. V. Neuzil, Blairstown.

Mrs. C. E. Shipman, wife of Dr. Clarence E. Shipman of Tiffin, Ohio and active in the Seneca County Kennel Club, hearing that 1500 dogs were without food or shelter in Cincinnati as a result of the recent flood of the Ohio River, appealed to dog lovers for funds to succor animal victims of the disaster, and immediately received more than $150 for this purpose from over a hundred contributors.

Dr. Wm. F. Lewis, Guthrie, Oklahoma, recently had a first-page write up, including five illustrations in *The Guthrie Daily Leader*, depicting an operation for the removal of a skillet handle from the sternal region of a cow. It was the doctor's opinion that the cow had swallowed the skillet handle and it had worked through the tissues to cause a subcutaneous abscess.



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Please mail me FREE Milk-Bone for my dog. Also free folder, "How to care for and feed your dog." (Print name plainly. Paste coupon on a penny post-card, if you wish.)

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Address .....

City and State .....

You Know Puppies Need Vitamine A—Give Them Carotene—In Gaines Food

It is practically conceded that dogs—and particularly puppies—under modern living conditions rarely get enough vitamine A in their diet. . . . The great natural source of this vitamine is *Carotene*, derived from the chromoplasts of various plants. . . . The recent addition of *Carotene* to Gaines Dog Food, therefore, is not entirely a precautionary measure; but, rather, a definite expansion of the value of the Food, *as a* food. . . . With Carotene, Gaines Food—even more than before—merits your consideration.

A Good Dog Food—Plus

Carotene is but one of the features of Gaines Food—the need for which has been discovered through long, careful research. . . . To illustrate, Cod Liver Oil deteriorates—so that in Gaines Food is *sealed*. . . . Starches are hard for dogs to handle—so, Enzymatic Material is added to Gaines Food. . . . The whole list of refinements have been made to make this ration truly complete and really balanced—so far as is, today, possible.

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KANSAS VETERINARIANS MEET IN WICHITA

One hundred veterinarians attended the thirty-third annual meeting of the Kansas Veterinary Medical Association, held at Wichita, January 13-14, 1937. The attendance would have been larger except for the extremely icy condition of the roads.

The program included: President's Address, by W. W. Wiseman, Delphos; an address by Col. Robt. J. Foster, president of the A. V. M. A.; "Studies in Nutrition," by Kent R. Dudley, Iola; "Dental Operations in the Horse (with Demonstrations," by A. H. Gish, Eldorado; "Equine Parasites," by T. P. Crispell, Parsons; "Sheep Diseases," by W. R. Barnard, Belleville; "Twenty Years of Veterinary Practice," by W. A. Adams, Glasco; and "The Treatment of Gastro-Intestinal Disturbances in Dogs," by R. L. Anderes of Kansas City, Mo.

The officers elected for the ensuing year, were: President, L. A. Hammers, Clearwater; vice-president, Kent R. Dudley, Iola; secretary-treasurer, Chas. W. Bower, Topeka, and member of executive board, S. L. Stewart, Olathe.

The next meeting of the association will be held in Topeka in January, 1938.

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

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such as distemper, gastro-enteritis, infected wounds, abscesses, etc., respond quickly to

DAVENIL

the new potent, polyvalent, antibacterial lysinogen.

Davenil arouses the combative powers of the blood, increases antibody production, and raises the opsonic index; it stimulates the defense mechanism, especially the production of "giant police cells" or the clasmatocytes. Davenil thus hastens the localization of an infection and shortens its duration and intensity. It may be used *without harm*—no serum reactions, no negative phase. It is an extremely practical agent for use in *everyday practice*.

Davenil is available in bottles of 10 cc. and 50 cc. If you are not familiar with it, the attached coupon will bring you supplies for testing.

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VIAFERM MINERAL COMPOUND

1. Prevents and corrects abortion caused by demineralization.
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4. Eliminates hairless pigs.
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6. Promotes resistance to disease.
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8. Increases milk flow.
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Viaferm Mineral Compound Contains

essential Minerals in their proper portion, combined with 10% dried yeast culture and potassium Iodine to conform with specifications of the Iodine Educational Bureau—does not contain any salts or fillers.

Viaferm Mineral Compound should be fed from breeding time until pigs are weaned. After weaning time it should be part of the regular ration for the pigs. Costs less than one-third cent per head per day to feed.

Viaferm Mineral Compound is sold only through veterinarians.
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ARMY VETERINARY SERVICE

Captain Harvie R. Ellis was relieved from further assignment and duty at the Cavalry School, Fort Riley, Kans., effective on or about February 1, 1937, and directed to proceed to Fort Geo. Wright, Wash., for duty.

Lt. Col. Geo. H. Koon is relieved from his present assignment and duty at Ft. Sam Houston, Texas, and from additional duty at headquarters, Eighth Corps Area, Ft. Sam Houston, Texas, and will report to the commanding general, Eighth Corps Area, Ft. Sam Houston, Texas, for duty with the Medical Department at his headquarters.

Each of the following-named officers of the Veterinary Corps is relieved from further assignment and duty at the station as specified after his name, effective in time to comply with this order and is assigned to the Army Medical Center, Washington, D. C., for the purpose of pursuing a course of instruction at the Army Veterinary School, beginning Aug. 18, 1937; Capt. Clarence L. Taylor, San Francisco P. of E., Ft. Mason, Calif.; Capt. Wayne O. Kester, Fort Bliss, Texas; 1st Lt. Albert A. Roby, Jr., Fort Bliss, Texas; 1st Lt. Curtis W. Betzold, Ft. Sam Houston, Texas, and 1st Lt. William E. Jennings, Ft. Ringgold, Texas.

Major Herbert M. Cox is assigned to Fort Bliss, Texas, for duty effective upon completion of his tour of foreign service in the Panama Canal Department.

Major Lloyd C. Ewen is assigned to Front Royal Quartermaster Depot, Front Royal, Va., for duty, effective upon completion of his present tour of foreign service in the Hawaiian Department.

The promotion of Captain Ernest E. Hodgson to grade of major to rank from February 2, 1937, is announced.

Major James A. McCallam is relieved from further assignment and duty at Fort Belvoir, Va., and from additional duty as attending veterinarian, Fort Washington, Md., and Fort Hunt, Va., effective on or about July 10, 1937, and directed to proceed to Fort Sill, Okla., for duty.

Veterinary Reserve Corps

New Acceptances: 1st Lts. Joseph Frank Kanppenberger, Manhattan, Kansas; Edward William Ramsey, Brady, Texas; Ernest H. Leonhard, Longmont, Colorado; Mark Bay Lindsay, Huntington Park, California; Eugene Butler Ingmand, Zionsville, Indiana, and Archie Douglas Tolley, Colorado Springs, Colorado.

Promotions: Wm. Gustav Keehn, Kansas City, Mo., to Major; Wm. Clinton Nye, Sweet Grass, Mont., to Captain; Russell Emmett Hammond, Youngstown, Ohio, Jos. Leo Cavanaugh, Esbon, Kans., and Harold Jack Jewell, Ardmore, Oklahoma, to 1st Lieutenant.

New Assignment to Active Duty with CCC: 1st Lts. Kenneth S. Young, Chicago, Ill.; Milton Werrin, Hq. Third Corps Area, Baltimore; Moray Claude Coop, San Antonio, Texas; John Wright Upchurch, Fort Worth, Texas; Nels Frank Christensen, Fort Crook, Nebr., and James J. Miller, Presidio of San Francisco, Calif.

Termination of Assignment to Active Duty: 1st Lts. Arthur R. Thiele, Ft. Brass, N. C.; Ernest St. J. Watkins, Medford, Oregon; Bernard E. Foote, Silver City, N. Mex., and Cirilo Lagmay Adan, Fort Meade, S. Dak.

Combined Eastern States Veterinary Conference

July 7, 8, 9 — 1937

The New York State Veterinary Medical Society has invited the veterinary medical societies of the various eastern states to cooperate in holding one big joint meeting this summer, instead of individual state meetings. The purpose is to pool all interests in programs and clinics in an endeavor to get the best talent available and have a great meeting. The state societies of Pennsylvania, Nw Jersey, Maryland, Delaware, the District of Columbia, and the New England states have approved the plan and a rousing meeting is assured. The Organizing Committee consisting of members from all participating states extends a most cordial invitation to all veterinarians to be present.

All meetings, clinics, demonstrations, exhibits and entertainment will be at the HOTEL NEW YORKER.

Reserve these dates—July 7, 8, 9, 1937. More complete information and your personal invitation will follow soon. It will be a gala meeting—don't miss it!

Virginia Veterinarians Confer

The fourth annual veterinary conference of graduate veterinarians was held at Blacksburg, Va., February 16, 17, 18, 1937. The conference was sponsored by the Biology Department of Virginia Polytechnic Institute. Forty veterinarians registered during the conference.

Dr. Norman J. Pyle of Lederle Laboratories, discussed gastro-intestinal infections of the dog. Dr. C. J. Lange discussed with particular reference to the influence of the glandular secretions on the conformation of the various breeds of dogs.

Professor C. F. DeLaBarre, President of the Virginia Wild Life Federation, discussed various phases of wild life conservation and the part veterinarians can play in such a program. A discussion of area bot control in horses was held by Dr. L. E. Starr, with progress reports by Drs. L. K. Bailey and J. E. Greer.

A clinic on poultry diseases was conducted by Drs. E. P. Johnson and D. G. Lee. This was followed by a lecture by Dr. R. J. Foster, President of the A. V. M. A.

Dr. W. J. Lentz, University of Pennsylvania, discussed nutrition and diet in the dog and cat. Dr. H. C. Givens gave a progress report on area Bang's disease control in Virginia.

Try HEMO-RATION in difficult cases

• DO YOU HAVE AN ANIMAL LIKE THIS UNDER YOUR CARE NOW? . . . Every veterinarian, from time to time, has an animal that is in poor flesh and all effort to remedy this condition is without satisfactory result.

In cases like this, and in all other difficult feeding cases, where the animal does not satisfactorily respond to ordinary diets, Chappel Bros. recommend HEMO-RATION.

Many veterinarians find that when HEMO-RATION is fed to such animals, they show immediate response and in time fill out and again become well-conditioned, healthy specimens.

Whenever you need a highly nutritious, easily digested food, try HEMO-RATION. It is so nutritious that you can feed less of it and it will still do a vastly better nourishing job than the usual amounts of ordinary foods.

KEEP A CASE OF CHAPPEL'S HEMO-RATION ON HAND AT ALL TIMES. Let us prove to you the supreme nutritional qualities of this food. Take advantage of our special offer now of a FREE Practical Sample of HEMO-RATION to any veterinarian.

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Mr. Burhans, well-known dog breeder, was instrumental in getting the largest showing of English cockers, at the recent Chicago specialty show, ever benched in this country. Mr. Burhans maintains a large kennel of stud and working cockers at Lombard, Ill. He is a member of the staff of the Vitality Mills Feed Co., Chicago.

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Keeps Small Animals "Fit"

HERE'S an effective reconstructive — TONAMINE. It builds up the strength of undernourished puppies and convalescent animals. Restores the appetite of run-down small animals. Successfully offers Vitamin B, G and D as a supplement to regular diet. Also rich in food value and good for distemper. Write for booklet.

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Pharmaceutical Chemists Since 1886

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Vitamins
IDEAL DOG FOOD
Contains:
6 times Vitamin A
Requirements of a growing dog
4 times Vitamin B
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3 times Vitamin D
Requirements of a growing dog
Truly a food you can safely recommend

Ideal DOG FOOD
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Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

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Animal Health in Danger

One of the problems confronting farmers and livestock men after flood waters recede from their farms is that of livestock health. The U. S. Department of Agriculture recommends that any dead animals be buried deep, or burned in case dry fuel can be obtained. Most of such animals will have died by drowning, but some may have been diseased and, if left exposed, would provide a source of infection to survivors. Regardless of the cause of death, sanitary disposal of all carcasses will eliminate a needless hazard. Above all, do not feed the carcasses to other animals, says the department.

Veterinary sanitary authorities and local veterinarians should be relied upon for advice in any animal-health situation with which the livestock owner is not familiar.

The problem of feed is likely to be trying on many farms. Much of the hay, grain, and other feeds which have been soaked with water and soiled with silt and even barnyard filth, are potentially dangerous and should not be fed unless absolutely necessary. However, some of the grain, and even some hay if otherwise sound, may be salvaged by spreading it out to dry, after preliminary washing in clean water when necessary. Horses are especially likely to develop serious

(*Concluded on page XVII*)

APRIL SHOWERS

are apt to be hard on sheltered pets and lead to inflamed joints and respiratory infections.

Antiphlogistine

is often the veterinarian's "best bet" in these conditions.

Write for sample and literature.

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gastrointestinal and other disturbances from damp, fermented, moldy or otherwise damaged feed. A process of sorting will eliminate the poorest materials from the horse feed. As a general rule, cattle will tolerate slightly spoiled feeds better than horses, but caution must be used. Hogs may feed on materials which other animals could not utilize without injury.

It is recommended that stagnant ponds and pools left by the floods be drained as soon as possible for the sake of animal as well as human health.

—Press Information, U. S. Dept of Agr.

Examination for Oklahoma License

The Oklahoma State Board of Veterinary Medical Examiners will hold their next regular examination at the State Capitol Building, Oklahoma City, April 5, 1937. Those wishing to take the examination should report to the State Veterinarian not later than 8:30 A. M., April 5th.—Walter H. Martin, El Reno, *secretary*.

During the French Revolution, when a highly placed member attempted to wither an opponent of lower origin by asking: "Is it true, as I have been told, that the member from X is a veterinary?" the member from X replied: "Yes, Monsieur. Are you ill?"

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The NEW STEWART CLIPMASTER

New Easy-Grip handle only 2" in diameter

Veterinarians who have tested the new Clipmaster say it is the finest, fastest, easiest to use dog clipper of all time.

Clipmaster has powerful, air-cooled, ball bearing motor inside the special composition handle. Perfect balance for clipping in any position.

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"Gave excellent service on 300 dogs last summer."

Clipmaster complete with 20 feet of cord, for use on any 110-volt A. C. or D. C., only $16.95. For other voltages $18.95. (Slightly higher West of Denver.) At your dealer's or send us $2.00. Pay balance on arrival. Write for catalog showing complete line of STEWART clipping and shearing machines. Made and guaranteed by Chicago Flexible Shaft Co., 5516 Roosevelt Road, Chicago, Illinois.

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such as distemper, gastro-enteritis, infected wounds, abscesses, etc., respond quickly to

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the new potent, polyvalent, antibacterial lysinogen.

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JUDY'S DOG ENCYCLOPEDIA, 2nd ed.; all dog subjects, $5.00 cash or C. O. D. Can furnish any dog book. Dog World subscriptions $2.00 for one year; five years, $5.00. JUDY PUBLISHING COMPANY, 3323 Michigan Blvd., Chicago.

FOR SALE: Good small animal hospital and residence in Northern Illinois, for price of property. Good mixed practice, dairy section; town of 22,000; good roads. Write for plan and price. Address No. 156, care of VETERINARY MEDICINE.

VETERINARY PRACTICES, physicians, etc., furnished; also assistants, etc. Practices handled for sale. F. V. Kniest, 1537 S. 29th St., Omaha, Nebr. Established 1904.

FOR SALE: Small Animal Hospital and apartment, with established general practice; town over 20,000 in Kansas; ideal educational facilities; wonderful business opportunity; owner retiring. Address No. 165, care of VETERINARY MEDICINE.

WANTED: Young veterinarian licensed in Indiana and preferably in Ohio also, for partner in a general practice, established 27 years. Prefer one interested in both large and small animal practice. Good location. No investment required. Health failing. Address No. 162, care of VETERINARY MEDICINE.

NEW BOOK ON HORSESHOEING, containing 164 cuts of shoes, with full description of each shoe. The most valuable information to veterinarians. $1.00, postpaid. Henry Asmus, New York State Veterinary College, Ithaca, N. Y.

FINE SADDLE HORSES? Full reports of all shows? Beautiful horse pictures? Advice on his training? Complete saddle horse news for only $2.00 per year (12 beautiful magazines). The National Horseman, 512 Fourth St., Louisville, Kentucky.

WANTED: Experienced veterinarian would be interested in hearing from a practitioner who wishes to sell or share his practice in Ontario, Canada. Address No. 163, care of VETERINARY MEDICINE.

FOR SALE: Books, instruments, operating table, office furniture and practice. Price reasonable. Will rent office. Good location on Highway 70, just outside the Safford, Arizona city limits. Address No. 164, care of VETERINARY MEDICINE.

FOR SALE: Dental instruments, stomach tubes, syringes, cautery, casting harness, bags, etc. Write. Best offer takes any part. Address: F. Gilgen, 3174 Golden, Box 2800, Long Beach, Calif.

WANTED: Copies of the February, June, July and September 1936 issues of VETERINARY MEDICINE. Your subscription will be advanced one month for each magazine returned. Veterinary Magazine Corp., 75 E. Wacker Drive, Chicago, Ill.

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Dr. Naylor's Medicated Teat Dilators

A safe and dependable treatment for Spider Teats, Scab Teats, Cut and Bruised Teats, Obstructions and for keeping teat canal open after operating.
Dr. Naylor Dilators fit either large or small teats without overstretching or tearing, are easy to insert and stay IN the teat. They carry antiseptics and healing agents into teat canal to combat infection and promote healing. The dilators themselves are Sterilized, Soft, Absorbent dressings which protect the inflamed area, absorb inflammatory exudates and keep teat canal open in its natural shape while tissues heal.

Price to Veterinarians

Dollar Package (contains 48 Dilators).....$8.00 Per Doz.
Fifty Cent Package (contains 18 Dilators)..... 4.00 Per Doz.
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H. W. NAYLOR CO. MORRIS, N. Y.

Dr. William T. Hornaday, long head of the New York Zoological Gardens, and widely known naturalist, died at his home in Stamford, Connecticut, March 6th, at the age of 82 years. Much of the credit for the present state and federal regulations for the conservation of wild water fowl and other wild life is due Doctor Hornaday, whose interest in this subject was lifelong. Doctor Hornaday retired from the office of Curator of the New York Zoo in 1926, and was succeeded by Dr. Wm. Reid Blair.

Orval Herbert Hostetler, Nampa, Idaho, aged 33, died August 10, 1936, as a result of repeated gall stone operations. Doctor Hostetler was born in McPherson, Kansas, and was graduated from the College of Veterinary Medicine, State College of Washington, in 1930. He was associated with his father, who has practiced veterinary medicine in Nampa for about 30 years. Doctor Hostetler is survived by his parents, two sisters and one brother.

Dr. Emil Knight, Rochester, N. Y., died Jan. 4, 1937.

Dr. Chas. Haasjes, Shelby, Mich., spent the winter at Sarasota, Fla.

Periostine

Horse Back To Work in Three To Five Days

It is a powerful antidote to inflammation occurring in the periosteum, articulations, bursæ, tendons, ligaments; also where there is pain, exostosis or lameness. Usually only one application is necessary. One bottle is sufficient to treat three or more cases.

Endorsed by almost every veterinarian that has given it a trial.

FREE Booklet—"Reminders in Diagnosing Obscure Lameness."

Price per bottle..$2.00
Three bottles 5.00

Free Sample. To Every Veterinarian that has not received a sample, we will gladly send postpaid a liberal sample upon request. No obligation.

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THE FINEST LOCATION IN

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The advantages of a splendid central location; the prestige of a renowned address; the luxuries of a truly fine hotel — all these, and more, are yours when you select the Melbourne Hotel as your St. Louis headquarters.

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WITH BATH
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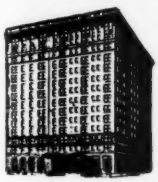

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Garage in Connection.

J. K. Bryan, Manager

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Fistone is unanimously agreed upon by thousands of famous veterinarians throughout the world as the medicine of choice for its efficacy and performance in the case of animal diseases such as Fistula of the Withers, poll evil, nasal gleet, endo-metritis and chronic suppurative diseases of unknown origin.

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The Fistone and Appliance Company,
College Corner, Ohio.

Trial Order—one dozen boxes (once only)....$ 8.00
Regular Price—one dozen boxes..... 10.00
One-half dozen boxes..... 5.00

Enclose check or Money Order with order.
Postage Prepaid.

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Dear Doctor:

In unusually severe cases of *Sarcoptic Mange*, before advising that the animal be destroyed, try

PIXATERPA

This *Therapogen* product has often cured where everything else has failed.

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HORSES and MULES

Are in demand for farm work. Horses and mules are selling for higher prices than for the past several years. Increased demand results in more sales and more traffic in horses and mules and facilitates the spread of strangles and shipping fever. These diseases are of considerable economic importance because of the serious handicap to the putting in of farm crops. Strangles, other streptococcic infections, and hemorrhagic septicemia are the most common diseases this season of the year.

It is not uncommon for all horses and mules on a farm to become affected with these diseases and thus cause suspension of all farm work. The prevention of these diseases is possible by the use of properly prepared bacterin. Because of the widespread occurrence of these maladies, it is advisable to treat all farm horses and mules before spring work begins. This kind of service will be appreciated by horse owners.

Kinsley's Influenza bacterin has been successfully used, not only on farms but also in public markets. One injection usually suffices as a preventative agent for unexposed animals. Two or more injections should be given to exposed animals.

Our Streptococcus bacterin is par-excellent in the control of colt strangles, and pyaemic arthritis bacterin is of value in controlling navel ill.

Write, telephone or telegraph. Phone Logan 4600.

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1103 East 47th St. Kansas City, Missouri

Lederle Catalog

The 1937 Veterinary Catalog and Price List of the Lederle Laboratories, Inc., Pearl River, N. Y., is just off the press. It is the intention to distribute this catalog to every practicing veterinarian in North America. Any not receiving it in due course, should acquaint the company with the omission. In addition to a description of all Lederle biological and pharmaceutical products, the catalog contains much information of a pathologic and therapeutic nature.

Rabies Quarantine

The Panama Canal Zone Health Department recently issued the following regulation governing the conditions under which dogs may be imported into the Canal Zone.

The persistent, wide spread, presence of rabies (hydrophobia) in animals and to a lesser extent in man, and the absence of the disease in the Republic of Panama and the Panama Canal Zone, make necessary additional precautions against the entrance of the disease.

Accordingly, on and after July 1, 1937, dogs and cats to be admitted into the Panama Canal Zone and the terminal ports of Panama and Colon, must be accompanied by certificate that they are not suffering from a contagious disease and that during the twelve months preceding proposed admittance they have not been exposed to infection with rabies.

Biosol

Soluble bismuth and arsenic linked with hexamethylenamine then combined with sodium benzoate, iodide, salicylate in a special base for hypodermic medication.

For horses, cattle, dogs, cats in treatment of distemper, influenza, mixed infections, toxic and septic conditions.

Price $2.40 per 100 cc bottle, prepaid.

Iosol

Semi-stainless, washable iodine. Contains no oil, glycerine or alcohol. Price sixty cents per four-ounce bottle, prepaid.

Literature.

Dr. R. C. Leininger
924 Madison Street, Oak Park, Ill.

THE INJECTABLE ARSENICAL

ALTERATIVE, TONIC RECONSTRUCTIVE

ARICYL

Reg. U. S. Pat. Off. & Canada
Brand of ARSACTO

THE indications for Aricyl conform to those of arsenical medication in general. This preparation is remarkably rapid in its action and it is well tolerated locally and systemically. Aricyl is particularly valuable, in conjunction with topical application of Odylen, in the treatment of follicular mange and chronic eczema.

Aricyl may be administered subcutaneously, intramuscularly, or intravenously.

SUPPLIED:

For small animals—1 cc. ampules . . Boxes of 10's
For large animals—10 cc. ampules . . Boxes of 5's

Informative literature and prices on request.

WINTHROP CHEMICAL COMPANY, INC.
170 Varick Street New York City
Factories:
Rensselaer, N. Y. Windsor, Ont.

Jen-Sal

DEXTRO-CALCI-NATE

A Sterile Solution

Containing Dextrose U.S.P. 3½ oz. with Calcium Borogluconate 2¾ oz.

DOSE: Cattle, 500 c.c.; Horses, 250 to 500 c.c.; Sheep and Hogs, 50 to 100 c.c.; Small animals, ½ to 1 c.c. per pound body weight.

Administer intravenously or subcutaneously.

◇ ◇ ◇

Indicated in METABOLIC DISTURBANCES where blood calcium is lowered and central nervous symptoms are present complicated by intoxication due to incomplete fat combustion.

◇ ◇ ◇

USEFUL IN ACETONEMIA—MILK FEVER—WHEAT POISONING

AND SIMILAR CONDITIONS

Per Pkg. 6-500 c.c. **Bottles** .....**$4.50.** Code for pkg. "Dexate"

JENSEN-SALSBERY LABORATORIES, Inc.

KANSAS CITY, MO.

Ohio State Veterinary Conference

The tenth annual conference of the College of Veterinary Medicine, The Ohio State University, will be held June 16-17-18, 1937. This year, as formerly, the program is extensive and includes some of the foremost veterinarians in this country. A special effort has been made in arranging the details of the program so that its quality and variety will appeal to all veterinarians.

O. V. Brumley

The program has been formulated for the purpose of giving to the practitioner the latest developments in the field of veterinary medicine. It is generally conceded that such intensive short courses are necessary for the busy practitioner. The College of Veterinary Medicine hopes it will be possible for a large number to avail themselves of this opportunity to receive the latest information concerning the real problems in their various fields of activity.

Programs of the conference will be mailed on request. Everything possible will be done to make attendance at this conference pleasant and profitable.

Remember the dates, June 16, 17, and 18, 1937. This is a change from former years.

Columbus, O. OSCAR V. BRUMLEY,

Western Michigan Clinic

Elaborate preparations are being made for the seventh annual clinic of the Western Michigan Veterinary Association, which will be held at the Ionia Fair Grounds, Ionia, Michigan, July 29, 1937. This event has grown from year to year and attracts veterinarians, not only from all parts of Michigan, but from all nearby states. For further information communicate with the secretary, Dr. Chas. Haasjes, Shelby, Michigan.

Nicholas F. Williams Dead

Too late for a more extended notice in this issue, word was received of the death of Dr. N. F. Williams, April 9, 1937. Doctor Williams was graduated from the Kansas City Veterinary College in1911. He practiced in Fort Worth, Texas and later served Texas as State Veterinarian. He was president of the A. V. M. A. in 1932-33, and during recent years, manager of the Jensen-Salsbery Laboratories' branch in Philadelphia, in which city his death occured. He is survived by his widow.

N. F. Williams

American Animal Hospital Association

The fourth annual meeting of the American Animal Hospital Association will be held at the Book-Cadillac Hotel, Detroit, Michigan, May 6-8, 1937.

With the spring pig crop now in the offing, the advertising committee of the Associated Serum Producers has just announced plans for an intensive drive this spring to stress the vital importance of having the new pig crop immunized against hog cholera.

The campaign will take three forms:

Paid advertising running for four months in twelve leading farm and livestock journals.

A one-month intensive campaign of spot announcements on leading radio stations, to begin around weaning time.

Educational news releases to more than 1,000 newspapers in the eight largest hog-producing states.

All the material will emphasize the importance of having immunizing done only by a veterinarian —and will point to some of the dangers of not doing so.

During the past several months, the Associated Serum Producers' educational campaign on the radio, in the interests of the Veterinary profession has covered a wider territory than heretofore. The talks on livestock health subjects prepared by the American Foundation for Animal Health has been broadcast, or is now being broadcast over stations in Iowa, Illinois, Missouri, Kansas, Nebraska and South Dakota. During the coming month they will also go on the air in Indiana, Ohio, Minnesota and Oklahoma. The following broadcasting stations have been used.

KRNT	Des Moines
WMT	Waterloo
WCBS	Springfield, Ill.
KMBC	Kansas City
KSOO	Sioux Falls
KFAB	Lincoln
KSAC	Manhattan, Kansas

Arrangements are being made for this service over several other stations covering two more states.

Iowa District Meetings

At the East Central [Iowa] Veterinary Association dinner-meeting at Cedar Rapids, March 11, 1937, 46 veterinary practitioners were in attendance, from Cedar, Linn, Jones, Polk, Buchanan, Mahaska, Johnson, Butler, Benton, Jackson, Boone, Iowa and Delaware counties. The following technical program was presented:

Ruptured Prepubian Tendon by Wm. S. O'Brien, Ryan; Mastitis in Sows by Iva Dunn, Atkins; Torticollis in a Mare, by P. V. Neuzil, Blairs-

Try HEMO-RATION in difficult cases

• **DO YOU HAVE AN ANIMAL LIKE THIS UNDER YOUR CARE NOW? . . .** Every veterinarian, from time to time, has an animal that is in poor flesh and all effort to remedy this condition is without satisfactory result.

In cases like this, and in all other difficult feeding cases, where the animal does not satisfactorily respond to ordinary diets, Chappel Bros. recommend HEMO-RATION.

Many veterinarians find that when HEMO-RATION is fed to such animals, they show immediate response and in time fill out and again become well-conditioned, healthy specimens.

Whenever you need a highly nutritious, easily digested food, try HEMO-RATION. It is so nutritious that you can feed less of it and it will still do a vastly better nourishing job than the usual amounts of ordinary foods.

KEEP A CASE OF CHAPPEL'S HEMO-RATION ON HAND AT ALL TIMES. Let us prove to you the supreme nutritional qualities of this food. Take advantage of our special offer now of a **FREE Practical Sample of HEMO-RATION** to any veterinarian.

SPECIAL OFFER

A Practical Sample of Chappel's HEMO-RATION will be sent FREE to any veterinarian. Address your request to

CHAPPEL BROS. INC.
503 Peoples Avenue
Rockford, Illinois

Announcing unprecedented low prices on

Anthelmintic Capsules for Swine No. 1

FORT DODGE

Available in 2½, 3 and 4 grains of Santonin combined with 2½ grains Calomel, Thymol and Aloin Q.S. In red gelatine capsules, 100 to the bottle.

	100	500	1,000
2½-gr. Capsules	$4.15	$20.25	$39.00
3-gr. Capsules	5.00	24.25	47.00
4-gr. Capsules	6.25	30.50	59.50

Above prices (subject to change without notice) are subject to a 10% trade —2% cash discount. Full stocks of fresh capsules at all branches and agencies.

BULK SANTONIN—at equally attractive low prices—crystal Santonin USP, in bulk, in ounces, pounds and kilos. Orders for Santonin capsules or bulk Santonin should be placed at once, as the Santonin market may fluctuate widely.

FORT DODGE LABORATORIES, Inc., Fort Dodge, Iowa

Member, Veterinary Exhibitors' Association

FORT DODGE

town; Dietary Deficiencies of Swine, by R. M. Hofferd, Cedar Rapids; Artificial Feeding of Foals, by A. R. Menary, Cedar Rapids; Removal of Shoulder Tumors, by F. M. Wilson, Mechanicsville; Nail Pricks, by P. V. Neuzil, Blairstown; Intravenous Treatment of Parturient Paresis, by C. H. Banks, Tipton; Rendering Plant Inspection, by W. C. Stewart, Maquoketa; Operative Technic of Teat Surgery, by A. R. Menary, Cedar Rapids, and Inequality of Veterinary Fees, by John B. Bryant, Mt. Vernon.

The Cedar Valley [Iowa] Veterinary Association held a dinner-meeting on March 8, 1937, at Waterloo, attended by 36 veterinary practitioners, representing Cedar, Linn, Floyd, Benton, Delaware, Tama, Buchanan, Bremer, Butler, Grundy, Franklin, Polk, Blackhawk and Hardin counties. The following program was presented:

Motion Pictures, Scenes in Horse Raising Districts of Rural England and Belgium, by Harry Linn, Des Moines, secretary of the Horse and Mule Association of Iowa; Motion Pictures, Iowa's Dairies, Creameries and Cheese Factories, by Ernest White, Waterloo, secretary, Iowa Dairy Association; Cardiac Thrombosis in Swine, by R. M. Hofferd, Cedar Rapids; Case Reports from Sheep Practice, by A. R. Stephenson, Bennett, and Rendering Plant Inspection, by H. A. Seidell, Des Moines.

TONAMINE

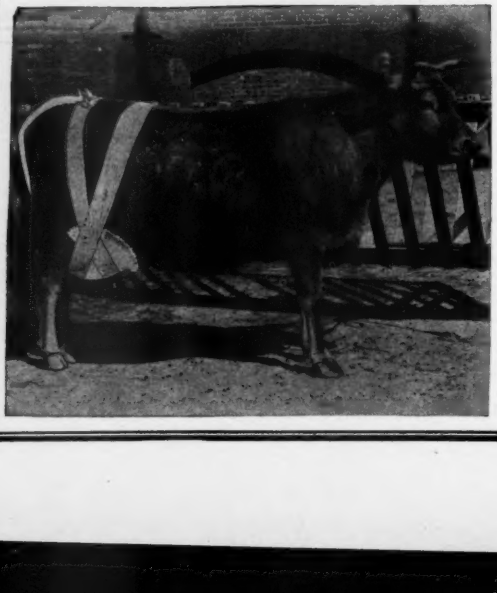
Keeps Small Animals "Fit"

HERE'S an effective reconstructive — TONAMINE. It builds up the strength of undernourished puppies and convalescent animals. Restores the appetite of run-down small animals. Successfully offers Vitamin B, G and D as a supplement to regular diet. Also rich in food value and good for distemper. Write for booklet.

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

MAMMITIS

To relieve the swollen, hot and tender udder, have you tried



Antiphlogistine?

Following its application, it is recommended that a wide bandage be tied around the body to support the udder.

Sample on request

THE DENVER CHEMICAL MFG. CO.
163 Varick Street,
NEW YORK, N. Y.

Doctor Whiting Succumbs to Heart Attack

Rex A. Whiting, aged 52, died at his home in San Diego, Calif., March 27, of an acute heart attack. Doctor Whting was graduated from the New York State Veterinary College in 1905 and took a post graduate course at the same institution in 1906.

He was employed in the Federal B. A. I., from 1908 to 1910, during which time he studied at the University of Pennsylvania and the University of Michigan. In 1911 he became associated professor of veterinary science at Purdue University. He held this position for nearly 18 years, during which time he did much research work on animal diseases, resigning to become pathologist and Director of Research at the San Diego Zoological Hospital. He was engaged in this work for about three years, then engaged in practice. In 1932, he accepted a position as veterinarian with the San Diego County Health Department, which position he held until his death.

He is survived by his widow and two daughters.

Illinois State Board Examinations

The examinations for candidates for license to practice Veterinary Medicine in Illinois will be held in Chicago July 19 and 20, 1937.

For application blanks and full details write to the Superintendent of Registration, Department of Registration and Education, Springfield, Illinois. The veterinary examining committee comprises L. A. Merillat, Chicago, president; W. H. Shaw, Pawnee; and W. W. Warnock, Aledo.

★ ★ ★

THE PEOPLE'S CHOICE

Fistone is unanimously agreed upon by thousands of famous veterinarians throughout the world as the medicine of choice for its efficacy and performance in the case of animal diseases such as Fistula of the Withers, poll evil, nasal gleet, endo-metritis and chronic suppurative diseases of unknown origin.

FISTONE

The Fistone and Appliance Company,
College Corner, Ohio.

Trial Order—one dozen boxes (once only)....$ 8.00
Regular Price—one dozen boxes..... 10.00
One-half dozen boxes..... 5.00

Enclose check or Money Order with order.
Postage Prepaid.

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Take a tip from experts . . feed your dog MILK-BONE

IT doesn't make sense to put up with hit-or-miss feeding these days. Milk-Bone is so *easy* to get. It's so good for dogs! It has been the standby of the nation's dog-lovers for a full generation. Milk-Bone is packed full of sound, healthful nourishment, with plenty of the elements that every dog needs for pep and a glossy coat. It's made of clean, wholesome beef meat, milk, cereals, food minerals, irradiated yeast and cod liver oil. Start your dog on the way to rugged health. Get a package of Milk-Bone from your dealer today.

FREE SAMPLE

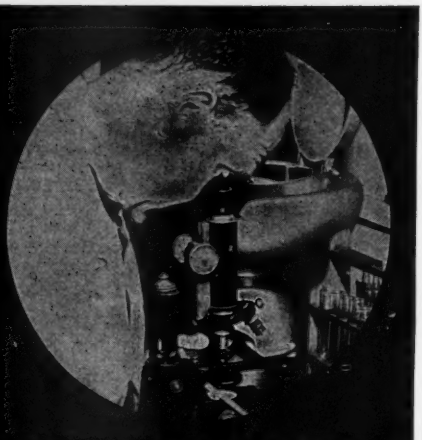
Milk-Bone Bakery,
National Biscuit Co., Dept. L-537
449 West 14th Street, New York

Please mail me FREE Milk-Bone for my dog. Also free folder "How to care for and feed your dog." (Print your name plainly. Paste coupon on a penny post-card if you wish.)

Name .....

Address .....

City and State.....



TI-O-GA FORMULA Based on FACT not Theory

The manufacturers of TI-O-GA Dog Food, specialists in the preparation of animal foods for over 29 years, have been among the first to investigate every new theory relating to canine feeding.

However, before incorporating food ingredients into the TI-O-GA formula on the basis of any such theory, it has been our practice to test them thoroughly in our biological laboratory and experimental kennels. Constant experimentation in relation to canine feeding has been conducted at the TI-O-GA Dog Food Biological Laboratories for over 7 years. Not until the beneficial results of the new ingredients have been observed, first on rats, then on living dogs, are they incorporated into the TI-O-GA formula.

For these reasons you may use and recommend TI-O-GA Dog Food in your professional capacity with complete confidence. If interested in dispensing TI-O-GA write to Dept. M-66, Balorations, Inc., Division of Tioga Mills, Waverly, N. Y.

TI·O·GA *complete* DOG *and* PUPPY FOODS

HARLTON'S LIQUID BLISTER *and* **FREE BOOKLET**

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.
460 West Jefferson Avenue, Detroit, Michigan
Canadian Branch, 139 Sandwich St., Windsor, Ontario

Mechanicsville Clinic

This noted summer clinic of the Eastern Iowa Veterinary Association will be held June 22, 1937.

Veterinary Meetings to Study Nutrition

All licensed veterinarians in this locality are invited to attend one of a series of programs presented by Swift & Co., in various Illinois cities. Those who attend will be guests of Swift & Co., for dinner preceding the meeting. Following the dinner, the expert in charge of their nutritional research laboratory will give an illustrated lecture on the nutritional requirements of small carnivora.

Attendance is invited at whichever of the following groups is most convenient:

Monday, March 29 (7:30 P. M. dinner)—Hotel Leland, Springfield, Ill.

Thursday, April 1 (7:30 P. M. dinner)—Hotel Fort Armstrong, Rock Island, Ill.

Friday, April 2 (7:30 P. M. dinner)—Hotel Pere Marquette, Peoria, Ill.

Tuesday, April 6 (7:30 P. M. dinner)—Hotel Wolford, Danville, Ill.

Small animal dietetics is a matter of rapidy growing interest to all practitioners and attendance at one of these meetings should prove well worth while.—*L. A. Gray*, Sec. Mississippi Valley Veterinary Medical Association, Inc., Bushnell, Ill.

The Thinking Veterinarian

carefully considers the plant and personnel of the people operating same. He selects only products in the production of which he has confidence. It is necessary that the operators be experienced, honest and conscientious.

Many Veterinarians in practice have used Missouri Valley serum for years, knowing that all steps in its production have been safeguarded and that there is no better product manufactured.

DRUGS AND BIOLOGICS are carried by all of our branches and distributors—place your order with the one nearest you.

MISSOURI VALLEY SERUM COMPANY

50 NORTH SECOND STREET *Member of Associated Serum Producers* **KANSAS CITY, KANSAS**

Louisiana Veterinary Short Course

The sixth annual course of the University of Louisiana was held in connection with the Louisiana Veterinary Medical Association February 9-10, 1937, in Baton Rouge.

Dr. L. A. Merillat, Chicago, gave an interesting talk on parasites of horses and mules. Much enthusiasm over the use of mass capsules of carbon disulphide for the stomach parasites was manifested and numerous questions were asked.

Dr. J. F. DeVine, Goshen, New York, Dr. R. W. Williams, Eldorado, Arkansas, Dr. D. M. Williams, McComb, Mississippi, and Dr. H. R. Wesson, Scranton, Iowa, were other out of state visitors.

Dr. C. R. Donham, Ohio State University, gave one of his usual interesting talks on cattle practice. His favorite topic is Bang's disease.

Dr. Richard Self, Dallas, Texas, handled his subject dealing with the problems of small animal practitioners, with special attention to fractures.

Col. Robt. J. Foster, president of the A. V. M. A., discussed "Days Ahead for the A. V. M. A.," stressing the importance of organization for achievement.

This meeting was acclaimed by all present as the best since the short courses were started six years ago.

F. Collins, Munroe, was elected president; P. J. Orchard, Baton Rouge, vice-president; and C. M. Heflin, Baton Rouge, reelected secretary.

RESULTS, 100%!

35 recoveries out of 35 cases treated! This Azamine accomplishment in a herd of cows infected with Vaginitis is reported by G. A. Knapp in the Journal of the A.V.M.A. Results approximating this are recorded in both large and small animal practice, in urinary and intestinal infections, Mastitis and Coccidiosis.

AZAMINE

Literature on Request

RARE CHEMICALS INC.

Nepera Park, N. Y.

UNCLE SAM'S GIFT TO THE NATION

THE EVER-POPULAR

HOT SPRINGS

NATIONAL PARK · ARKANSAS

Bathe in these Famous Thermal Waters

OWNED AND SUPERVISED BY THE UNITED STATES GOVERNMENT

Bathe your way to health in the mineral waters of this famous government-supervised spa. Through a treatment of baths and through drinking the mineral waters thousands have found relief from rheumatism, arthritis, neuritis, gout, diabetes and other diseases. Nervous disorders disappear in the vigorous outdoor life of Hot Springs, that features golf, horseback riding and hiking.

Come and Play ~ Regain Health

Stop at **MAJESTIC HOTEL**

BATH HOUSE AND APARTMENTS

The Majestic offers a wide choice of accommodations from single rooms, with or without bath, to beautifully furnished 2, 3, and 4 room apartments, assuring maximum comfort amid attractive surroundings. Rates are surprisingly moderate from $1.50. Two restaurants serve excellent food.

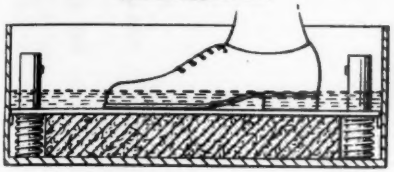
BRUCE E. WALLACE,
Manager

H. GRADY MANNING, *Pres.*
SOUTHWEST HOTELS INC.

Write for free Descriptive Literature

Ketchum Foot Disinfector

(Patent applied for)



A portable box, filled with liquid disinfectant for cleaning footwear to prevent carrying germs into Barns, Poultry Houses, Etc.

When foot is placed on perforated plate inside box, the disinfectant flows up, out of the sponge like filler beneath, around the footwear.

Made of all rust proof metal with a tight cover and convenient handle for carrying and may be transported without spilling or splashing.

Price:

East of the Mississippi, $5.50, delivered
West of the Mississippi, 6.00, delivered
West of the Rockies, 6.50, delivered

KETCHUM MFG. CO.

DEPT. A. LUZERNE, N. Y.

Fladness Made Chief of Field Inspection Division, B.A.I.

The appointment of Dr. S. O. Fladness as chief of the Field Inspection Division of the Bureau of Animal Industry, is announced by the U. S. Department of Agriculture. Doctor Fladness, for the last five years assistant chief of the Division, succeeds Dr. George W. Pope, who retired February 28.

Doctor Fladness has had wide and varied experience in veterinary and other livestock work since he entered the Bureau in 1906. He has participated in scabies, and tick-eradication work in the West and South, in campaigns against foot-and-mouth disease during 1914 and 1924, and in tuberculosis-eradication work.

On two occasions he was sent to South America to investigate disease-control methods and their relation to foreign trade. He represented the Bureau of Animal Industry in Mexico where he was stationed in 1925, and served as special investigator in connection with the administration of the Packers and Stockyards Act.

As chief of the Field Inspection Division, Doctor Fladness will direct the Federal veterinary quarantine service maintained for the exclusion of various foreign livestock diseases. He also will administer much of the Federal control and eradication work against cattle and sheep scabies, anthrax, and dourine.

Often *imitated*
but *never equalled*

THERAPOGEN

The antiseptic made especially for Veterinarians

•

Samples and literature sent upon request

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THEODORE MEYER EST.

MFG. CHEMISTS

213 S. 10TH STREET PHILADELPHIA, PA.
DEPT. V

The Immunity Tests **conducted by the U. S. Department of Agriculture, as reported in Technical Bulletin No. 468, shows the efficiency of various Anthrax biological products, and supports our recommendations.**

ANTHRAX PROPHYLAXIS

INTRADERMAL ANTHRAX VACCINE

Jen-Sal

The only Anthrax biological product that gives the following immunization results:

1st—Solid Immunity within four days after vaccination.

2nd—Immunity which persists for 360 days.

This product is inexpensive and requires professional service for administration.

SUPPLIED IN 20 AND 100 DOSE VIALS

Administration is facilitated by using a 19 gauge ¾ inch needle with extra long point as designed by Dr. M. E. Meier, Texas.

Jen-Sal

Suitable for dispensing when professional service seems impractical to meet a competitive situation.

SUPPLIED IN 10 DOSE VIALS

SINGLE DOSE

SUBCUTANEOUS ANTHRAX VACCINE

Anthrax Spore Vaccine for subcutaneous injection suitable for cattle, horses and mules.

Equal in immunizing value to other single Dose Subcutaneous Products.

Note—Jen-Sal Anti-Anthrax Serum supplied in 100 and 500 c.c. bottles of equine or bovine origin. Send for Complete Literature.

The Jen-Sal Laboratories produce a complete line of Anthrax products for distribution to veterinarians only.

JENSEN-SALSBERY LABORATORIES, INC.

Kansas City Missouri

A Brigadier General for the Army Veterinary Corps

April 29th, Senator Royal S. Copeland of New York introduced into the U. S. Senate a bill known as S. 2311, "To provide for adequate medical and dental service for individuals of the Military Establishment of the United States," which provides, among other things, for the appointment of five additional assistants to the Surgeon General in the grade of brigadier general, three of these assistants to be officers of the Medical Corps, one an officer of the Dental Corps and one an officer of the Veterinary Corps.

The Veterinary Corps of the Army is responsible not only for the maintenance of the efficiency of the animals of the army and the inspection of the grain and forage purchased by the army, both for quality and for compliance with specifications, but also for the inspection of all food of animal origin used by the army personnel. By direction of commanding officers, veterinary officers are often charged with the inspection of food other than of animal origin, both for wholesomeness and compliance with specifications. It thus has a heavy responsibility (1)to insure that the government gets what it pays for in forage for its animals and food for the army personnel, (2) to conserve the animal strength of the army and maintain animal efficiency, and (3) to insure wholesome food for the army personnel.

When the cost of forage and food for the army (with the CCC), aggregating 75 million dollars annually, is considered, and when the importance of maintaining efficiency among army animals and of wholesome food for the military personnel is weighed, it is evident that the Veterinary Corps merits a general officer at its head. If any confirmation of this view is required, it is to be found in the fact that every Surgeon General of the Army since the World War has officially recommended that the Veterinary Corps be given a brigadier general and has urged the Congress to provide this grade for it by legislation.

The provision of S. 2311, establishing the rank of brigadier general in the Veterinary Corps, should be enacted. It has the unanimous support of the veterinary profession. All veterinarians should see or write their United States Senators and Representatives in the lower house of Congress immediately, requesting them to support this measure.

The only reasonable objection that can be raised to this measure is that motorization and mechanization in the army is reducing the number of animals required, and therefore, the work of the Veterinary Corps. This objection yields to scrutiny. In the first place, the much-discussed elimination of animals from the new type infantry division is yet in the early experimental stages and may not be accomplished; in fact, cannot be accomplished even in the Regular Army until new types of motor vehicles are developed. In a general mobilization at this time, or at any forseeable time in the future, the difficulties of supply would be overwhelming and animal transport would necessarily have to be used largely.

A second reason why the Veterinary Corps faces no reduction in personnel or responsibility is the fact that the corps is even now inadequate in number to perform its duties, and for more than two years has required augmentation by approximately 100 Veterinary Reserve Officers assigned to active duty (with the CCC) to carry out its duties of food inspection.

Senate 2311 has extremely energetic support from the American Dental Association and the active support of the American Medical Association. In some form, pershaps amended, its passage is probable. The veterinary profession will have much with which to reproach itself if, through lack of support, the provision to include a veterinary officer among the newly-created brigadier generals is eliminated from the bill before passage.

Eastern States Veterinary Conference

The keen interest of veterinarians of the Eastern States in pooling their resources for the combined meeting of the state societies of New York, Pennsylvania, New Jersey, Maryland, Delaware, The District of Columbia and the New England States, assures a good meeting.

The meeting will comprise a large animal section, a small animal section, and a section including meat and milk hygiene, poultry, pet birds and educational exhibits.

The entire meeting including the clinic will be held in different ballrooms on the same floor of the Hotel New Yorker, New York City. The Hotel New Yorker is air cooled and especially adapted to a meeting at this time of the year.

All veterinarians are welcome!

ORGANIZING COMMITTEE
C. P. ZEPP, Chairman.

Dr. R. A. Hendershott was named chief of the Bureau of Animal Industry of the New Jersey State Department of Agriculture, April 16, 1937, succeeding the late Dr. John H. McNeil. Doctor Hendershott has been acting chief of the bureau since September.

Robert L. Washburn, 51, Gloversville, N. Y., died April 13, 1937, after an illness of one week. Doctor Washburn was graduated from the McKillip Veterinary College in 1909 and practiced in Havana, Cuba, until the United States entered the World War, in which he served as a captain, in the Veterinary Corps. Following the war, he located in Gloversville, where he has since practiced. He is survived by his widow, a brother and two sisters.

The SQUARE MEAL DOG FOOD

HOW many dogs are lucky enough to get what veterinarians would call a "square meal" every day? Thousands of dogs are cheated of life-sustaining nourishment at every meal time — cheated by cheap, bargain "food."

Ken-L-Ration is THE SQUARE MEAL DOG FOOD. It contains the right kind of active proteins, vitamins and minerals the dog *needs* and *must have.*

Ken-L-Ration gives the dog a *square deal* in nourishment. There is no guesswork about this. Ken-L-Ration's outstanding quality is proved daily in the Chappel laboratories and in the homes of millions of dog owners. Leading kennels have long ago proved Ken-L-Ration's "square meal" quality in their own kennels. That's why they feed Ken-L-Ration Products exclusively.

Recommend Ken-L-Ration, THE SQUARE MEAL DOG FOOD, to your clients.

CHAPPEL BROS. INC.

503 Peoples Avenue
Rockford, Illinois

Startling facts about the amazing differences in dog foods are contained in the illustrated booklet, "A Dog's Life and His Diet." Write to us for a free copy.

Wisconsin Meeting

The summer meeting of the Wisconsin Veterinary Medical Association will be held in Madison, June 29-30, 1937.

Anti-Hog-Cholera Campaign

A radio campaign over twelve midwestern stations, urging farmers to have their hogs vaccinated against cholera by a veterinarian, is being launched this month as a new development in the educational campaign sponsored by the Associated Serum Producers. The announcements will begin around weaning time for pigs and will continue through June.

Stations being used include WLS, Chicago; KMBC, Kansas City; KFAB, Lincoln; WOW, Omaha; WBNS, Columbus, Ohio; WCCO, Minneapolis; KSOO, Sioux Falls, S. D.; WOWO, Ft. Wayne, Ind.; WCBS, Springfield, Ill.; KRNT, Des Moines; WMT, Waterloo, Ia.; WHO, Des Moines, and KFNF, Shenandoah, Ia.

The radio copy emphasizes the dangers of hog cholera, the wisdom of having spring pigs vaccinated around weaning time, and the importance of having the vaccinating done by a veterinarian.

The Associated Serum Producers have also announced plans for a new series of summer radio talks, to take up summer diseases of livestock and to be presented starting in June or July over leading college and commercial stations.

ALLANSOL

The Rapid Cell Proliferant and Healing Stimulant

USEFUL in treating cases of Osteomylitis and other deep seated wounds. Allansol results in more rapid healing. Causes new cell growth at the site of application only. The *jelly* should be used where the *solution* cannot be used to advantage. The jelly is supplied in tubes with elongated tip.

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

Manufacturers of TONAMINE

SUPERCHARGED with FOOD VALUE

IDEAL DOG FOOD

We make this statement after years of study and numerous biological assays, "SUPERCHARGED with FOOD VALUE." Made under a Wilson Fellowship which is maintained at a leading midwestern university.

Ideal Dog Food contains:

6 times the Vitamin A
4 times the Vitamin B
3 times the Vitamin D

Requirements of a growing dog

Ideal DOG FOOD

A PRODUCT OF WILSON & CO.

The Veterinarian Back of the Syringe

While the Syringe is necessary for the proper vaccination of pigs, it is of little value if a good reliable, potent Anti-Hog-Cholera-Serum is not used. The Veterinarian stands back of the Syringe and the Missouri Valley Serum Company stands back of the Veterinarian in producing a Serum of the highest quality for the protection of the Veterinarian and his client.

Drugs and Biologics are carried by all of our Branches and Distributors—give them your next order.

MISSOURI VALLEY SERUM COMPANY

50 NORTH SECOND STREET **KANSAS CITY, KANSAS**

Member of Associated Serum Producers

Noted British Veterinarian Dies

Mr. H. Caulton Reeks, M.R.C.V.S., Spaulding, England, died April 6, 1937, at the age of 65. Mr. Reeks' text, "The Common Colics of the Horse," is known to practically every American veterinarian. His later work, "Diseases of the Horse's Foot," is also well known in this country. He had practiced in Spaulding since graduation in 1896, carrying on the practice established by his father, Mr. Frederic H. Reeks, nearly 60 years ago.

Dr. J. C. Phillips, aged 57, died suddenly at his home in Lethbridge, Alberta, on March 26, 1937, from perforating gastric ulcers.

Doctor Phillips commenced his veterinary studies at the Chicago Veterinary College, and was graduated from the Ontario Veterinary College in 1921. After practicing a short time in eastern Canada, he was appointed by the Canadian government to the Dominion Research Station at Lethbridge, where he remained until his death.

He is survived by his widow and five sons, two of whom are veterinarians with the Dominion Government of Canada.

Oklahoma Meeting

The 22nd semi-annual meeting of the Oklahoma Veterinary Medical Association will be held at the Skirvin Hotel, Oklahoma City, June 7-8, 1937.

A Reminder to Veterinarians who are Contemplating a Summer Vacation

. . . . Put a package of Antiphlogistine in your baggage for personal use in case of emergency or accident. In both human and veterinary practice alike, it is a valuable dressing for direct application to raw and painful surfaces and wherever inflammation and congestion are present.

Antiphlogistine

Sample on request

THE DENVER CHEMICAL MFG. CO.

163 Varick Street **New York**

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.
460 West Jefferson Avenue, Detroit, Michigan
Canadian Branch, 139 Sandwich St., Windsor, Ontario

State Veterinarian Reappointed

Dr. J. L. Axby was reappointed State Veterinarian of Indiana for a second four-year term, May 1, 1937.

California Examination

The next meeting of the California Board of Examiners in Veterinary Medicine will be held in Long Beach, June 21-23, 1937.

Kansas Examination

The Kansas State Board of Veterinary Examiners will hold the spring examination in the Veterinary Building, Kansas State College, Manhattan, May 29, 1937, commencing at 8:00 A. M.

Ketchum Foot Disinfector

This is a device for the disinfection of boots, rubbers, overshoes, etc. It will prevent bringing into the barn and poultry houses infected material adhering to footwear.

The mechanism consists of an all rust-proof box filled with a disinfectant liquid, a perforated aluminum plate mounted on springs, and an absorbent material to prevent liquid splashing out during transportation.

When the plate is stepped on, it compresses the filler and allows the liquid to flow around the footwear. When foot is removed, the plate again resumes its normal position.

Correct and prevent nutritional conditions due to lack of minerals, vitamins and iodine in the regular feeding ration with VIAFERM MINERAL COMPOUND—10% yeast mixture for culturing feeds for swine. VIAFERM contains all essential minerals combined with dried yeast and with Iodine to conform to the specifications of the Iodine Educational Bureau. Saves feed. Increases assimilation. Promotes fast, sound growth.

TRY THIS SAMPLE

Get a sample of VIAFERM free—enough to culture 2 bu. of feed. See for yourself its better quality and superior action. Complete instructions sent with each sample.

Free

VITAMINERAL PRODUCTS CO. ILLINOIS

Be ready to get your share of the business that the new VIAFERM MINERAL COMPOUND advertising is developing for veterinarians throughout the country. Send for a free sample of VIAFERM and complete information as to its use to supply essential minerals, yeast and iodine to the regular swine ration. VIAFERM is sold only through veterinarians.

VITAMINERAL PRODUCTS CO.
1532 N. Adams St., Peoria, Ill.

als combined with ... conform to the specifications ... tional Bureau Saves feed. Increases assimilation. Promotes fast, sound growth

TRY THIS SAMPLE

Get a sample of VIAFERM free—enough to culture 2 bu. of feed. See for yourself its better quality and superior action. Complete instructions sent with each sample.

Free

VITAMINERAL PRODUCTS CO.
1532 N. Adams St., PEORIA, ILLINOIS
Please send free sample of VIAFERM.

Name.....

Address.....

Veterinarian.....

Address.....

VIAFERM

GLOVER'S

Double Action

FLEA POWDER

Kills FLEAS *and* LICE

On DOGS, CATS and FOXES

Glover's **Double-Action** FLEA POWDER merits your use and endorsement, because it actually KILLS fleas and lice. It also affords unusually long protection against reinfestation.

Its formula commends itself as a highly efficient powder embodying 20% Powdered Derris Root, containing 3% Rotenone and other Derris extracts—Daguelin, Tephrosin, Toxicarol and 80% Pyrethrum Flowers (Pyrethrins .9%). It retails at only 35c for 2-ounce can.

Try it at our expense. Please mail coupon, attached to your card or letterhead.

H. Clay Glover Co., Inc.,
462 Fourth Ave., New York.

I shall be pleased to receive gratis, postage prepaid, a container of Glover's *Double-Action* FLEA POWDER.

Name.....

Address .....

Hudson Valley Meeting

The regular quarterly meeting of the Hudson Valley Veterinary Medical Society, held at Poughkeepsie on February 10, 1937, was attended by 40 veterinarians. Among the guests was Dr. H. C. Stephenson of the New York State Valley College.

Maj. E. M. Curley, president, then introduced C. P. Zepp of New York, president of the New York State Veterinary Medical Society, who addressed the meeting on the subject, "Factors to Consider in Small Animal Practice and Hospitalization." The speaker emphasized the importance of business management and ethical practice in conducting a hospital for small animals. Doctor Zepp believes attention to all details is important and that it is necessary to satisfy animal owners to be successful. He recommends that careful case records be kept, and that clients be advised of the necessity of following feeding and other instructions carefully.

After considerable dsicussion, President Curley introduced C. J. Hoyt of Walden, whose topic was, "Dairy Practice." Doctor Hoyt referred to the danger of disease being carried from herd to herd through carelessness, and the necessity of great care and cleanliness on the part of practitioners when going from one farm to another. He emphasized the advantages of informing the owner what the treatment was intended to do and thereby inter-

For Better . . . Faster . . . Easier Dog Clipping

The NEW STEWART CLIPMASTER

New Easy-Grip handle only 2" in diameter

Veterinarians who have tested the new Clipmaster say it is the finest, fastest, easiest to use dog clipper of all time.

Clipmaster has powerful, air-cooled, ball bearing motor inside the special composition handle. Perfect balance for clipping in any position.

WHAT USERS SAY

"Got a compliment on every dog I clipped with Clipmaster."
"Paid for itself the first week I had it."
"Clipped 73 dogs without resharpening."
"Gave excellent service on 300 dogs last summer."

Clipmaster complete with 20 feet of cord, for use on any 110-volt A. C. or D. C., only $16.95. For other voltages $18.95. (Slightly higher West of Denver.) At your dealer's or send us $2.00. Pay balance on arrival. Write for catalog showing complete line of STEWART clipping and shearing machines. Made and guaranteed by Chicago Flexible Shaft Co., 5516 Roosevelt Road, Chicago, Illinois.

47 YEARS MAKING QUALITY PRODUCTS.

Dr. W. N. Hobbs died at his home in Kensington, Kansas, May 3, 1937, in his seventy-eighth year. Doctor Hobbs was graduated from the Kansas City Veterinary College in 1896 and practiced for a number of years in Holton and Lebanon, Kansas, but had practiced in Kensington, his boyhood home, for more than 20 years. He is survived by his widow, two daughters and a son, and two brothers, both veterinarians.

* * * *

A party was held at Cedar Rapids for Dr. J. I. Gibson, May 20, 1937. It was sort of a semi-centennial celebration, since it marked the fiftieth anniversary of Doctor Gibson's graduation from the Ontario Veterinary College. About 50 veterinarians of Eastern Iowa attended the celebration and Doctor Gibson was given a fancy pen and pencil set as a memento of the occasion. Dr. Walter C. Stewart, Maquoketa, made the presentation speech and Doctor Gibson replied in an impassioned speech of acceptance.

* * * *

Umbilical tape used in large dogs after an oophorectomy sometimes prevents trouble.—*W. B. Redman.*

FISTONE

For over a quarter of a century, the original and successful preparation unanimously agreed upon by thousands of famous veterinarians throughout the world as the medicine of choice for its efficacy and performance in cases such as Fistula of the Withers—Poll Evil—Quittor—Endo-Metritis and Chronic Suppurative diseases of unknown origin.

The Fistone and Appliance Company,
College Corner, Ohio.

Trial order—one dozen boxes (once only)....$ 8.00
Regular Price—one dozen boxes..... 10.00
One-half dozen boxes..... 5.00

Enclose check or money order with order—Postage Prepaid.

DR.....

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DID MILK-BONE MAKE YOU GROW THAT BIG?

If he's a small dog or a big dog Milk-Bone will give him health-building nourishment. It's the kind of good, wholesome food that's needed to make the most of any breed! It will keep your dog as full of life and pep as wholesome food elements in the propor proportions possibly can. Milk-Bone contains beef, cereals, milk, food minerals, irradiated yeast and cod liver oil. Your dog needs the vitamins Milk-Bone has! Get a package .of Milk-Bone from your dealer today.

FREE SAMPLE

Milk-Bone Bakery, National Biscuit Company
Dept. L-737, 449 West 14th Street, New York City
Please mail me FREE Milk-Bone for my dog. Also free folder "How to Care for and Feed Your Dog." (Print your name plainly. Paste coupon on a penny post-card if you wish.)

Name _____

Address _____

FOR HEMOLYTIC STREPTOCOCCAL INFECTIONS . . .

SULFANILAMIDE SQUIBB

(PARA-AMINO-BENZENE-SULFONAMIDE)

Sulfanilamide Cures Astound Physicians
Possibilities of New Drug Almost Limitless, A. M. A. Convention Is Informed—Effective for Gonorrhea
Gonorrhea Success
Press reports from
A·M·A
CONVENTION
Effective Germ Killer.
Drug Relieves Many Diseases, Doctors Told
Sulfanilamide Kills All the Urinary Tract Germs but One, Dr. Helmholtz Says
Fatal Only Inside Body
New Drug Described.

DON'T DELAY MAIL THIS COUPON TODAY

Try HEMO-RATION in difficult cases

• DO YOU HAVE AN ANIMAL LIKE THIS UNDER YOUR CARE NOW? . . . Every veterinarian, from time to time, has an animal that is in poor flesh and all effort to remedy this condition is without satisfactory result.

In cases like this, and in all other difficult feeding cases, where the animal does not satisfactorily respond to ordinary diets, Chappel Bros. recommend HEMO-RATION.

Many veterinarians find that when HEMO-RATION is fed to such animals, they show immediate response and in time fill out and again become well-conditioned, healthy specimens.

Whenever you need a highly nutritious, easily digested food, try HEMO-RATION. It is so nutritious that you can feed less of it and it will still do a vastly better nourishing job than the usual amounts of ordinary foods.

KEEP A CASE OF CHAPPEL'S HEMO-RATION ON HAND AT ALL TIMES. Let us prove to you the supreme nutritional qualities of this food. Take advantage of our special offer now of a FREE Practical Sample of HEMO-RATION to any veterinarian.

SPECIAL OFFER

A Practical Sample of Chappel's HEMO-RATION will be sent FREE to any veterinarian. Address your request to

CHAPPEL BROS. INC.
503 Peoples Avenue
Rockford, Illinois

TONAMINE

. . . an Effective Reconstructive

If you haven't used TONAMINE for building up the strength of convalescent animals . . . for undernourished puppies . . . for distemper . . . and for keeping small animals "fit"—you have a pleasant surprise in store for you.

TONAMINE contains a large quantity of Vitamin B Complex, known as Vitamins B and G. Also contains Vitamin D, the sunshine Vitamin. Works wonders as a general reconstructive. Order an ample supply NOW!

See Us at the
AVMA Convention
Omaha—Aug. 17-20

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

Public Veterinary Programs

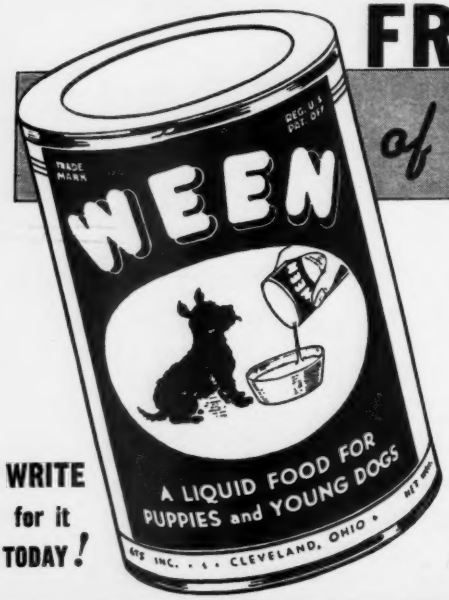
Plans for the continuation of the educational and advertising campaign of the Associated Serum Producers for another year and a half were announced this week by the executive committee, following a formal ballot taken among all member companies.

The move follows widespread approval of the current campaign both by practicing veterinarians and prominent veterinary organizations throughout the country. The new campaign will follow the same lines as the one now in progress, except that it will be on a larger scale, and will continue until January 1, 1939.

According to the new budget just approved by member companies the 1937-38 effort will include bi-monthly news releases on animal health subjects to over 1,000 newspapers and farm publications, the furnishing of a weekly feature column "Health Hints for Livestock" to 800 newspapers who have requested this feature, two series of informative talks over leading radio stations—one in summer and another in winter, a spring campaign of spot announcements on radio stations around pig weaning time, a series of paid advertisements in eleven farm journals in the spring and fall, and further distribution of the booklet on Livestock Health through practicing veterinarians.

Most of this work will be carried on through the American Foundation for Animal Health,

FREE SAMPLE of WEEN



WRITE for it TODAY!

Nutrition is frequently at the bottom of difficulties with puppies and young dogs. Ween is frequently the answer. It is a new liquid food practically identical with bitches' milk in composition, especially in proportion of milk proteins, fats and carbohydrates.

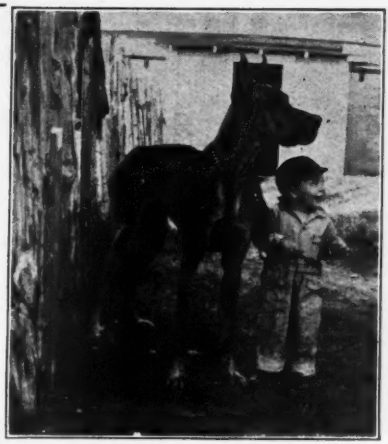
High Vitamin and Mineral Content

The vitamin content is high, scientifically balanced to include liberal amounts of Carotene (Pro-Vitamin A), Vitamin B-1, Vitamin D and Vitamin B-2 or G (complex), not only for maintenance, but for vitality and vigorous normal growth. The mineral content is also high. It follows that WEEN gives highly satisfactory nutritional results. Fed to lactating bitches, WEEN stimulates milk flow. The pregnant bitch will produce stronger litters if fed WEEN. Fine also for stud dogs.

Find out whether or not Ween fits into your program. We will send you absolutely without cost or obligation a free sample. Write today.

LIFE PRODUCTS, INC. 5th FLOOR, COOK BLDG. 46th & PROSPECT CLEVELAND, OHIO.

Remember
The Seventy-Fourth
Annual Meeting
A. V. M. A.
August 17-20
OMAHA



"My Veterinarian Told Me To Use Gaines Food"

Quite the most welcome letters that come to us are those which tell of some veterinarian recommending Gaines Dog Food. For—it is our purpose to make a ration that will win the approval of the profession. It is no patent medicine—no cure-all—merely a good Food that we are always trying to make better. You will be interested in the source of Vitamine A we use—Carotene—in the sealing of the Norwegian Cod Liver Oil against deterioration—in the Enzymatic Material that turns starches to sugar . . . in the biological proof that is behind this Food. We hope that after testing it you, too, will be willing to recommend it to your clientele as well as use it in your practice.

GAINES MEAT AND MILK MEAL COOKED

THE MEAL FORM

GAINES KRUNCHON MEAT & MILK MEAL IN PRESSED FORM

THE PELLET FORM

Ask for Trial Bags Free

Generous samples will gladly be sent on request. Also full details of our dealer proposition, provided we are not already represented in your territory.

GAINES FOOD CO.

Box H-7 **Sherburne, New York**

Warehouse: Seattle—San Francisco—Los Angeles—Houston—Kansas City—Roanoke

Separate rheostat removes heat from motor.
All bearings oilless; need no attention.
Heavy-duty waterproof cord with molded soft rubber plugs proved by underwriters.
Extra-heavy and wide base prevents "creeping" during operation.
Balanced cast aluminum arms give added strength and assure quiet operation.

A GOMCO
Electric Centrifuge

enables you to arrive at a more exact diagnosis in both fecal and urinary findings. This centrifuge is an essential part of your equipment providing you an opportunity of earning laboratory fees by performing this service yourself. Educate your clients to the necessity of periodic examinations for intestinal parasites to keep their animals in health.

Prices from $24 to $40.50

Send for Literature

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

FISTONE

For over a quarter of a century, the original and successful preparation unanimously agreed upon by thousands of famous veterinarians throughout the world as the medicine of choice for its efficacy and performance in cases such as Fistula of the Withers—Poll Evil—Quittor—Endo-Metritis and Chronic Suppurative diseases of unknown origin.

The Fistone and Appliance Company,
College Corner, Ohio.

Trial order—one dozen boxes (once only)....$ 8.00
Regular Price—one dozen boxes..... 10.00
One-half dozen boxes..... 5.00

Enclose check or money order with order—Postage Prepaid.

DR.....

ADDRESS.....

which has been underwritten by the Associated Serum Producers to disseminate such educational material.

The entire campaign will be designed to warn livestock owners of the dangers of various animal diseases, and to urge them to consult their veterinarian for reliable diagnosis and treatment.

On the request of a number of State Veterinary Associations, copies of the bi-monthly news releases and other educational material will also be furnished to many state associations for distribution to the press. This is expected to further extend the scope and influence of the program.

Plans have been made for an extensive exhibit of the Associated Serum Producers campaign at the Omaha convention of the A.V.M.A., so that veterinarians through the country may see the work that is being done in their behalf.

The companies cooperating in this publicity program are:

Allied Laboratories, Inc., Kansas City, Mo.; Blue Cross Norden Serum Co., Superior, Nebr.; Corn Belt Serum Co., East St. Louis, Ill.; Fort Dodge Laboratories, Inc., Fort Dodge, Ia.; Grain Belt Supply Co., South Omaha, Nebr.; Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.; Liberty Laboratories, Ralston, Nebr.; National Laboratories, Inc., Kansas City, Kans.; Norden Laboratories, Lincoln, Nebr.; Pitman-Moore Co., Indianapolis, Ind.; Platte Valley Serum Co., Grand Island, Nebr.; Sioux City Serum Co., Sioux City, Nebr.; Sioux Falls Serum Co., Sioux

VISIT OUR BOOTH

at the A.V.M.A. annual meeting

Find out how Ideal DOG FOOD

—is assayed under the Wilson fellowship in a leading midwestern university.

—offers more nutritional value per pound at no extra cost.

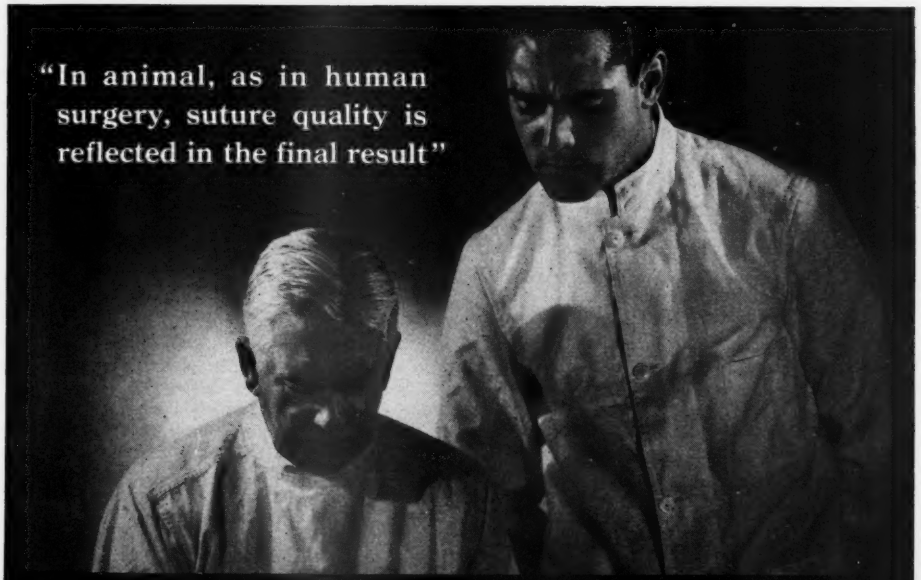
—contains all the natural ingredients necessary for a dog's healthy existence.

"See You in Omaha"

A PRODUCT OF

WILSON & CO.

Wilson & Co. are distributors of Old Trusty Products.



D&G Sutures

A QUARTER CENTURY OF LEADERSHIP

DAVIS & GECK, INC. - 217 DUFFIELD STREET - BROOKLYN, NEW YORK

New!

SPECIFIC *treatment for* STREPTOCOCCIC

and other Coccic infections

SULFAMIDE

Norden

(Sulfanilamide)

Suggested for mastitis, endometritis, tonsillitis, influenza complications, strangles, distemper, acute pharyngitis of the horse, pneumonia, etc.

See article, July-August Norden News

For Small Animals

5 gr., 100.....$1.20 500.....$5.60
1000.....$10.00

For Large Animals

20 gr., 25.....$1.30 100.....$4.50
less 10% and 2%.

NORDEN LABORATORIES

Trade Mark LINCOLN NEBRASKA *of Quality*

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.

460 West Jefferson Avenue, Detroit, Michigan
Canadian Branch, 139 Sandwich St., Windsor, Ontario

Falls, S. D.; The Columbus Serum Co., Columbus, O.; The Corn States Serum Co., Omaha, Nebr.; The Gregory Laboratory, White Hall, Ill.; The Royal Serum Co., Kansas City, Kans.; The Southwestern Serum Co., Wichita, Kans.; The United Serum Co., Kansas City, Kans.

Commencement

Division of Veterinary Medicine
Iowa State College, June 14, 1937

Total number graduated: 35.

Number receiving D. V. M. degrees: 34.

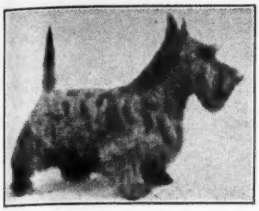
Number of veterinary graduates receiving M.S. Degrees: 1.

Number of graduates with B.S. Degrees: 6.

Number going into practice: 26.

Number going into federal, state, and institutional work: 9.

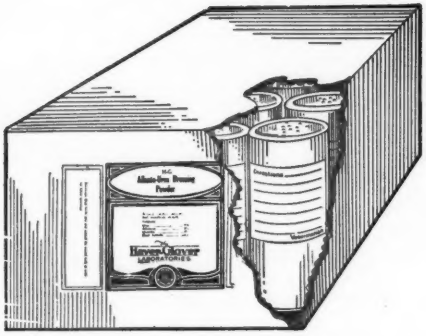
Graduates receiving D.V.M. degrees: Everett Theodore Anderson, Floyd William Bertels, Leonard Allen Bowstead, Raymond Nicholas Brenny, William Everett Brown, James Albert Butterworth, Don Leroy Caswell, Donald Rolfe Cordy, Cornelius Andrew DeValois, Lewis Albert Dykstra, Robert Frank Freeman, Lloyd Vern Fry, Paul Cecil Garner, Raymond Albert Gathmann, Ollie Revels Grantham, Charles Gaylord Hanna, Ray Davenport Hatch, Isaac Edward Hayes, Emil



Synthetic Maggot Treatment

ALLANTO-UREA DRESSING POWDER

Brings classical treatment of purulent wounds to the veterinary clinic.



A product of every day use in all branches of indoor and outdoor practice.

Allanto-Urea Dressing Powder is a stable, non-toxic, painless, simple and inexpensive powder without odor or irritant properties that acts as long as it remains in contact with the wound.

Antiseptic
Epitheliogenic
Deodorant

The merits of maggot treatment of infected wounds was never questioned since introduced several years ago, but it was too cumbersome (even in human surgery) to come into general use until this succedaneum was proved to have the same curative effect.

Carton of 12 3-oz. sifter top cans ***$2.00***

The Haver-Glover Laboratories

KANSAS CITY, MO.

(and Service Branches)

NEW YORK, N. Y. ATHENS, ALA. SAN FRANCISCO, CAL.
LANSING, MICH. CHICAGO, ILL. DALLAS, TEXAS LOS ANGELES, CAL.
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Member of the Veterinary Exhibitors' Association

PET CASKETS

Add to your income by offering this friendly, helpful service when the need arises. Kennel Caskets come in 4 sizes at inexpensive prices your clients can afford. Send for descriptive literature and wall plaque.

KENNEL CASKET CO.

1012 Wheaton Ave. Kalamazoo, Mich.

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Biological Testing

"Dog, Cat, Fox Food Exclusively"

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P. O. Box 933 E. Lansing, Mich.

Laurence Koch, August William Krause, Paul Ernest Maland, Lawrence Minsky, William Seastream Monlux, Russell Loy Oettiker, Howard Charles Raven, Benjamin Rosenfeld, Carl John Schubert, Sheo Piao, Benjamin Joseph Carl Sinkler, Herman Harold Soehl, Warren Bixby Thurber, Don Carrol Vest, George Miner Wilson, *Stanley Nixon Wood.

Post-graduates receiving M.S. degree:

Carlos Rosenbusch—Major in veterinary bacteriology.

The Honor Student in veterinary medicine was also the student holding the highest all-college average—Dr. Stanley Nixon Wood. Doctor Wood thereby became the winner of the George Judisch award.

The winners of the G. G. Graham awards—based on the students' clinic records—were: First prize, Dr. William E. Brown; Second Prize, Dr. Benjamin J. Sinkler.

Ohio District Meeting

The North Western Ohio Veterinary Medical Association will hold its next semi-annual meeting at the Elk's Club, Findlay, July 27th. All veterinarians are invited.

C. W. WITTY, Sec.

Elmore, Ohio.

*Received Degree July 22, 1937.

KERATITIS

(PINK EYE)

Keratitis season is just around the corner, according to past experience. This malady causes extensive economic loss in all classes of cattle. To the dairyman it signifies a diminished production of milk. To the rancher it signifies cattle to find water.

According to numerous veterinarians throughout the country pink eye can be controlled by the use of Keratitis Mixed Bacterin Bovine (Kinsley).

This product is prepared from symbiotically grown liquid media cultures, and contains not only the dead and disintegrating bacteria, but also their symbiotic metabolic products which play an important part in Anti-body stimulation.

Keratitis Bacterin symbiotically grown has stood the test of time, is extensively used, and has increased in popularity year after year.

If you have not used this product, we suggest that you give it a trial.

Wire, 'phone or write.

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1103 EAST 47TH STREET KANSAS CITY, MISSOURI

Michigan Graduates

At the Seventy-ninth Annual Commencement of the Michigan State College, the following students received the degree of Doctor of Veterinary Medicine:

John J. Arnold, Theodore M. Barr, Erwin A. Bortman, James L. Boydston, Breyton D. Brady, Charles H. Failing, Luther E. Fredrickson, Milo J. Henshaw, Russell J. Henshaw, Hans H. Ruhland, Lyle F. Spake, Edmund E. Visger, Josephine R. Von Eberstein, Ernest S. Weisner, Alvin R. Wingerter.

John J. Arnold graduated with high honors.

Those who received the degree of Doctor of Veterinary Medicine at the close of the Summer Session in 1936 are:

Ralph H. Benedict, Donald F. Freshour.

The senior prize offered by the Michigan State Veterinary Medical Association was awarded to Alvin R. Wingerter. John J. Arnold received the Reports of the Twelfth Veterinary Congress.

Oklahoma Examination

The Oklahoma Veterinary Medical Examining Board will hold an examination at the State Capitol Building, Oklahoma City, July 27th and 28th at 9 A.M. Application forms may be obtained from the Secretary-Treasurer, Dr. Samuel R. Espy, 125-127 West 23rd St., Oklahoma City, Oklahoma.

Periostine

Horse Back To Work in Three To Five Days

It is a powerful antidote to inflammation occurring in the periosteum, articulations, bursæ, tendons, ligaments; also where there is pain, exostosis or lameness. Usually only one application is necessary. One bottle is sufficient to treat three or more cases.

Endorsed by almost every veterinarian that has given it a trial.

FREE Booklet—"Reminders in Diagnosing Obscure Lameness."

Price per bottle..$2.00
Three bottles 5.00

Free Sample. To Every Veterinarian that has not received a sample, we will gladly send postpaid a liberal sample upon request. No obligation.

DETROIT VETERINARY SUPPLY CO.
Detroit, Michigan
Canadian Branch, Windsor, Ontario

WOUND DRESSING

AS a surgical dressing for raw and open wounds, Antiphlogistine has few equals.

It is antiseptic (without caustic qualities).

It does not need changing often.

It is adhesive and protective, and both easy and painless to apply and remove.

It aids the healing process.

ANTIPHLOGISTINE

Inflammation's antidote

Aug. 17-20, Annual meeting of A.V.M.A. at Omaha. Have you made your plans yet to attend? Your presence is necessary to help make it a success.

The Denver Chemical Manufacturing Company

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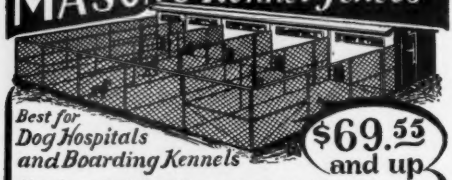
MASON'S *Kennel Fences*



Best for Dog Hospitals and Boarding Kennels

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Mason's are Real Kennel Fences—Strong, Good Looking and sold under a Money Back Guarantee to hold the largest and strongest dogs. Used and approved by best Kennels everywhere.

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Describing Permanent and Movable Dog Fences, Kennel Stalls, and Gates at Low Direct Factory Prices.

MASON KENNEL FENCE CO., Box 77, Leesburg, Ohio

Oklahoma Veterinarians Hold Successful Meeting

The 22nd semi-annual meeting of the Oklahoma Veterinary Medical Association was held in Oklahoma City, June 7-8, 1937, with an attendance of over one hundred veterinarians. The program included discussions on:

Undulant Fever, by Dr. Louis Dakil, Oklahoma City General Hospital; The Dependability of the Agglutination Test for Bang's Disease, by Walter Wisnicky, Director Live Stock Sanitation, Madison, Wisconsin, and A. T. Kinsley, Kansas City; Gastro-Intestinal Infections in Dogs and Their Differentiation, by Norman J. Pyle, Pearl River, New York; The Relation of the Veterinarian to Safe and Sane Milk Inspection, by Walter Hyde Martin, El Reno, Oklahoma; Equine Dentistry, by E. H. Leonhard, Oklahoma City; Canine Infectious Jaundice, and Canine Distemper, by Norman J. Pyle; Swine Erysipelas, by Roy T. Fisher, Stillwater; The Veterinarian's Place in the Community, by S. E. Douglas, Tahlequah, Oklahoma, and Veterinary Service of the CCC, by Capt. John H. Wirtz, V. C., Oklahoma City.

A banquet the evening of the seventh was attended by 131 persons; A. T. Kinsley serving acceptably as toastmaster.

The association passed a resolution urging that a member of the veterinary profession should be included with physicians, nurses and members of other professions in the council provided under the Social Security Act, and that a veterinarian should be included in the Public Health units provided under the act.

Favorable action was taken regarding a series of radio broadcasts to be put on by the association in agreement with the recommendation of the Committee on Public Relations of the A.V.M.A. A Committee on Public Relations was appointed to work out the details.

Entertainment for the ladies was in charge of the Ladies Auxiliary of the O.V.M.A.

F. Y. S. Moore, Sec.-Treas.

McAlester, Okla.

A. B. Clawson, Poison Plant Specialist, Dies

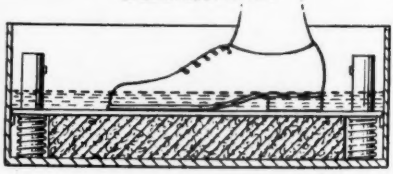
Arthur B. Clawson, physiologist in charge of stock-poisoning plant investigations of the Bureau of Animal Industry, U. S. Department of Agriculture, died at his home in Washington, D. C., June 30, 1937, after an illness of several months. Death was caused by cerebral thrombosis, with which he was stricken while engaged in field work in Utah. He had just passed his 59th birthday.

Mr. Clawson was considered by his associates as the best informed authority in the United States on the subject of stock-poisoning plants having been engaged in this work since 1907, when he accepted appointment in the U. S. Department of Agriculture. He was a native of Wisconsin and a graduate of the University of Michigan. Prior to coming with the Department he was instructor in biology, Lake Forest University, Lake Forest, Ill.

As author and co-author of numerous Government publications and special articles, Mr. Clawson was widely recognized for his service to the livestock industry. By tracing obscure causes of livestock loss to various poisonous plants and developing methods of prevention, Mr. Clawson greatly aided livestock owners. His success in this field resulted from scientific investigations supplemented by analytical studies of stock-raising practices throughout the United States, particularly on western ranges.

Ketchum Foot Disinfector

(Patent applied for)



A portable box, filled with liquid disinfectant for cleaning footwear to prevent carrying germs into Barns, Poultry Houses, Etc.

When foot is placed on perforated plate inside box, the disinfectant flows up, out of the sponge like filler beneath, around the footwear.

Made of all rust proof metal with a tight cover and convenient handle for carrying and may be transported without spilling or splashing.

Price:

East of the Mississippi, $5.50, delivered
West of the Mississippi, 6.00, delivered
West of the Rockies, 6.50, delivered

KETCHUM MFG. CO.

DEPT. A. LUZERNE, N. Y.

RESULTS

Veterinarians throughout the corn-belt have vaccinated thousands of pigs using Missouri Valley Serum with excellent results.

If you have not used Missouri Valley Serum now is the time to start—a trial order will convince you of its merits.

DRUGS AND BIOLOGICS are carried by all of our Branches and Distributors—give them your next order.

MISSOURI VALLEY SERUM CO.

50 N. 2ND ST. KANSAS CITY, KANSAS

Member of Associated Serum Producers

Samuel King Johnson, a practicing veterinarian in New York City for fifty years and founder of the Hartsdale Canine Cemetery at Hartsdale, N. Y., died Aug. 4, 1937, at his home, Greenwich, Conn., of a cerebral hemorrhage. He was eighty-three years old.

Dr. Johnson was associated for many years with the American Society for the Prevention of Cruelty to Animals as its official veterinarian. He was appointed by Henry Bergh, who founded the society in 1866. He was also instrumental in establishing veterinary hospitals in New York City.

PET CASKETS

Add to your income by offering this friendly, helpful service when the need arises. Kennel Caskets come in 4 sizes at inexpensive prices your clients can afford. Send for descriptive literature and wall plaque.

KENNEL CASKET CO.

1012 Wheaton Ave. Kalamazoo, Mich.

IT'S O.K. MAC—SHE'S BUYING OUR MILK-BONE!

Wise Dog Owners Buy Their Dogs Milk-Bone

The kind of clean, wholesome food a dog needs for rugged health—*plus* the essential vitamins he *must* have to keep a sheen to his coat and a sparkle to his eye — that's Milk-Bone! Its clean, appetizing odor may even tempt *you* to nibble a bit when you open the box—and no wonder, for Milk-Bone includes meat, milk, cereals, irradiated yeast, cod liver oil and other foods and essential minerals. Get a package from your dealer today.

FREE SAMPLE

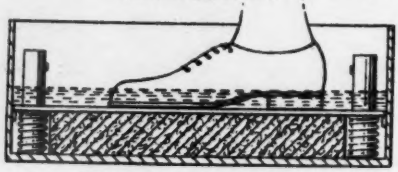
Milk-Bone Bakery, National Biscuit Company
Dept. L937, 449 West 14th St., New York City

Please mail me FREE Milk-Bone for my dog. Also free folder, "How to care for and feed your dog." (Print your name plainly. Paste coupon on a penny post-card if you wish.)

Name.....Address.....City and State.....

Ketchum Foot Disinfector

(Patent applied for)



A portable box, filled with liquid disinfectant for cleaning footwear to prevent carrying germs into Barns, Poultry Houses, Etc.

When foot is placed on perforated plate inside box, the disinfectant flows up, out of the sponge like filler beneath, around the footwear.

Made of all rust proof metal with a tight cover and convenient handle for carrying and may be transported without spilling or splashing.

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East of the Mississippi, $5.50, delivered
West of the Mississippi, 6.00, delivered
West of the Rockies, 6.50, delivered

KETCHUM MFG. CO.

DEPT. A. LUZERNE, N. Y.

Dr. E. L. V. Ferguson, Ionia, Michigan, left the annual meeting of the Michigan State Veterinary Medical Association, June 22, to attend a celebration by his townspeople, commemorating his fiftieth anniversary. On the following Sunday, June 27, a number of veterinarians and their families from nearby points, staged a picnic at Doctor Ferguson's home in honor of the occasion.

* * * *

Pioneer Veterinarian Passes Away

Doctor William Albert Thomas, aged 86, died July 6, 1937, at his home in Lincoln, Neb. Doctor Thomas was born in Willamantic, Conn., and came to Lincoln April 1, 1881, shortly after his graduation from Iowa State College. He was one of the earliest, if not the first, graduate veterinarian in Nebraska. He served as state veterinarian for a time in early days. After retiring from practice several years ago he devoted his time to the development of his small farm near the city, but retained a lively interest in the profession and its advances. His was a lovable character, always an entertaining visitor and he liked to discourse on the status of the veterinary profession of the early days, and on his experiences with dourine, Texas fever, anthrax, and other disorders.

Doctor Thomas is survived by three daughters, a brother, and a sister. L. V. E.

A liberal dusting with

THERAPOGEN POWDER

on all abrasions will prevent infection and hasten healing.

Samples and literature sent upon request.

THEODORE MEYER EST.

MFG. CHEMISTS

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WEEN

A Scientific Replacement for Bitches' Milk

WEEN is a scientific replacement for bitches' milk. It is fortified with Carotene (Pro-Vitamin A), Vitamin B_1, Vitamin D and Vitamin B_2 or G (complex). Recent research has indicated that liberal amounts of these vitamins are necessary for the optimum growth and development of the young dog.

WEEN is a liquid, and both easy and economical to feed. It solves the problem of providing proper nutrition for orphan puppies; for heavy litters, and for puppies before, during and after weening. Also especially valuable for in-whelp and nursing bitches, and for stud dogs. Many leading veterinarians and breeders are using WEEN with marked success.

WEEN is a high grade product manufactured from the finest materials obtainable under exacting laboratory control.

Write for professional sample and full information.

No. 35. No. 34.

WEEN Made the Difference

These dogs are females, and litter mates. Dog No. 34 was fed 40 days on WEEN only. Dog No. 35 was fed 40 days with all the whole milk it could eat, together with table left-overs—beef, bread, bones, etc. Note the smoother coat, sparkling eyes, fine bone structure and more alert appearance of the WEEN fed dog.

LIFE PRODUCTS, INC. 5th FLOOR, COOK BLDG. 46th & PROSPECT **CLEVELAND, OHIO.**

Common sense in working animals, water every hour and all the salt the animals want, is all good horsemen use in handling their work animals in hot weather. It will save work stock from heat prostrations.—*Wayne Dinsmore.*

Cooperation Has Economic Value

The effectiveness of cooperation, especially in large enterprises, received scientific endorsement from Dr. John R. Mohler, Chief of the Bureau of Animal Industry, in an address before the Eastern States Veterinary Conference, in New York City, July 7. He showed that in addition to other meritorious qualities, a cooperative attitude is an economical means of getting things done. Lack of this quality retards the progress of many worthy enterprises and increases their cost.

Considering his subject as a case history, the speaker analyzed it from a scientific standpoint and advanced reasons why some persons are excellent cooperators and others are individualists, with a majority having varying degrees of the cooperative spirit. Drawing a scientific analogy from breeds of livestock, some of which possess the herding instinct in greater degree than others, Doctor Mohler advanced the belief that heredity may be partly responsible for differences in the willingness of persons to work together. Then he pointed out that veterinary and other professional organizations might be even more effective if they picked their officers and committee members with a weather eye toward how they work with others as well as to their scientific attainments. In support of this belief, he stated that blanks now used for determining the efficiency of employes in the U. S. Department of Agriculture include a rating on cooperative tendencies.

The speaker cited historical events to show how varying degrees of cooperation among scientific leaders and their associates hastened or retarded progress in professional fields. Although paying tribute to individual initiative, Doctor Mohler urged that this quality, to be most productive, must be combined with a public-spirited, courageous, and optimistic attitude. Even though well qualified otherwise, a person who lacks the courage to act or who fears defeat, may hamper the work of his cooperative associates.

The occasion for his topic, "Cooperation in Applying Veterinary Science," was the present vast size of veterinary undertakings, many of which are conducted on a nation-wide scale and involve extensive cooperation among federal and state veterinary officials, livestock owners, and the public. These projects, of which the eradication of bovine tuberculosis is a conspicuous example, have been remarkably successful. Some of them have attracted world-wide acclamation for their effectiveness in improving animal and, indirectly, human health in addition to bringing about great economic savings.

Behind MERCUROCHROME

(dibrom-oxymercuri-fluorescein-sodium)

H.W.&D. *is a background of*

Precise manufacturing methods insuring uniformity

Controlled laboratory investigation

Chemical and biological control of each lot produced

Extensive clinical application

Thirteen years' acceptance by the Council of Pharmacy and Chemistry of the American Medical Association

HYNSON, WESTCOTT & DUNNING, Inc., Baltimore, Md.

Periostine

Horse Back To Work in Three To Five Days

It is a powerful antidote to inflammation occurring in the periosteum, articulations, bursæ, tendons, ligaments; also where there is pain, exostosis or lameness. Usually only one application is necessary. One bottle is sufficient to treat three or more cases.

Endorsed by almost every veterinarian that has given it a trial.

FREE Booklet—"Reminders in Diagnosing Obscure Lameness."

Price per bottle..$2.00
Three bottles 5.00

Free Sample. To Every Veterinarian that has not received a sample, we will gladly send postpaid a liberal sample upon request. No obligation.

DETROIT VETERINARY SUPPLY CO.
Detroit, Michigan
Canadian Branch, Windsor, Ontario

British West Indies Bars Dogs and Cats from U. S.

Persons who anticipate visiting the British West Indies are warned that dogs and cats from the United States are not permitted entry to the Islands. The Bureau of Animal Industry, U. S. Department of Agriculture, has just received notice that the new order is now in effect. This precaution on the part of Island officials has been taken as a means of preventing rabies infection from entering the Islands from the United States where it is known to exist.

A New Puppy Food That Finds Ready Demand

Food scientists at Cleveland, Ohio, with many years' experience in making milk products, have recently developed a new product to replace dam's milk for puppies and young dogs. Scientifically constructed to duplicate dog's milk in balance of food elements, it will save many orphaned puppies, assure uninterrupted development for weaned puppies and supplement the mother's milk in large litters. This product—"Ween"—is marketed in cans and its convenience over supplying a foster mother for one's clients will appeal strongly to veterinarians. Ween fed to lactating bitches with other foods stimulates milk flow.

THE

PASSION OF THE HOUR

in every branch of

VETERINARY MEDICINE

STREPTOCIDE TABLETS

5 gr. and 15 gr.

representing sulfanilamide, the new internal microbicide in the grainage shown.

Streptocide (sulfanilamide) has come rapidly into general use as an internal treatment for grave, acute infections of horses, cattle and dogs.

Among its indications are pneumonia of horses, obstetrical metritis of cows, mastitis, and the respiratory type of canine distemper.

5-grain for small animals
100.....$1.10; 500.....$4.85

15-grain for large animals
100.....$3.50

The **Haver-Glover** *Laboratories*

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NEW YORK, N. Y. **ATHENS, ALA.** **SAN FRANCISCO, CAL.**
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ALBANY, GA. **DENVER, COLO.** **CHAMPAIGN, ILL.** **KENT, WASHINGTON**

Member of the Veterinary Exhibitors' Association

Anthrax Outbreak

A serious outbreak of anthrax has occurred in southeastern South Dakota. The infection appears to be in virulent form and has been spreading rapidly during the last two weeks. In some districts cases have been reported on almost every farm, and already a large number of cattle and horses have died of the disease. The livestock sales agencies have had to cease operations in some counties during the emergency, and where the disease is at its worst the state officials have stopped all traffic in livestock.

Local, state, and federal veterinarians are assisting with the control work, immunizing of stock not yet affected, the burial or burning of carcasses of animals that have died of the disease, early detection of unreported cases, and attending to quarantine regulations.

Although the outbreak has not proved to be so extensive as a similar epizootic in 1932, officials warn stock owners to take every precaution to prevent the further spread of the infection. The U. S. Department of Agriculture has issued a warning to stockmen in the district effected urging them to cooperate with the veterinarians in charge.

MIXED BACTERIN BOVINE

(KINSLEY)

The usual losses of shipper cattle are due to hemorrhagic septicemia and pulmonary oedema separately or in combination.

Native cattle may become infected by exposure to diseased shipper cattle. Pulmonary oedema is more or less prevalent in calves on breeding and dairy farms.

Pulmonary oedema is manifested by difficult breathing, cough, depression and if complicated with hemorrhagic septicemia, there will be a rise of temperature. As the disease progresses, there will be a muco-purulent nasal discharge and rapid shrinkage and emaciation.

The characteristic lesion of pulmonary oedema is oedema of the lung. The lung will be heavy and soggy and the interstitial tissue between the lung lobules will be infilterated with quantities of oedematous fluid. Petechial hemorrhages in the lung, heart serous membranes, manifest hemorrhagic septicemia.

Mixed Bacterin Bovine (Kinsley) is a symbiotically prepared bacterin produced by growing the causative microbes of hemorrhagic septicemia and pulmonary oedema simultaneously in liquid culture media. This bacterin is one of the outstanding products that is available to the practitioner. It has stood the test of time.

Wire, 'Phone or Write

Regular Prices **Usual Discounts** **Prompt Service**

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For Older Dogs, Too

WEEN

Markedly Successful for In-Whelp and Nursing Bitches—Stud Dogs—Show Dogs

While especially developed for puppies from birth to maturity, leading veterinarians and breeders have had marked success in feeding WEEN to older dogs. Beneficial results have followed feeding to in-whelp and nursing bitches, and stud dogs. Also beneficial in carrying show dogs through the exhibition season in peak condition and in bringing back dogs off feed.

WEEN is a scientific replacement for bitches' milk. It is fortified with Carotene (Pro-Vitamin A), Vitamin B, Vitamin D, and Vitamin B_2 or G (complex), recent scientific investigations having shown that liberal amounts of these vitamins are essential for optimum growth and to maintain condition. WEEN is a liquid and both easy and economical to feed. It is a high grade product manufactured from the finest materials obtainable, under exacting laboratory control.

Write for professional sample and full information.

No. 35. No. 34.

WEEN Made the Difference

These dogs are females, and litter mates. Dog No. 34 was fed 40 days on WEEN only. Dog No. 35 was fed 40 days with all the whole milk it could eat, together with table leftovers—beef, bread, bones, etc. Note the smoother coat, sparkling eyes, fine bone structure and more alert appearance of the WEEN fed dog.

LIFE PRODUCTS, INC. 5th FLOOR, COOK BLDG. 40th & PROSPECT **CLEVELAND, OHIO.**

HARLTON'S LIQUID BLISTER *and* **FREE BOOKLET**

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.

460 West Jefferson Avenue, Detroit, Michigan

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FISTONE

★ An acknowledged successful treatment that is administered with the feed for fistula of the withers, fistula of the poll, quittor and affections of similar nature, where other means have failed.

Fistone has also made possible the profitable treatment of chronic cases of fistulous withers that were impossible to handle surgically for economic reasons.

Convincing proof of its merit is its imitations. Fistone is regularly employed by veterinarians in every state in the union, in Canada and England.

OUR SLOGAN: *"When everything Else Fails, Try Fistone"*

COUPON

The Fistone and Appliance Company, College Corner, Ohio.

Enclosed please find check for $8.00, for which send me one dozen 12-ounce boxes of Fistone (trial order) once only. (Regular price $10.) One-half dozen boxes $5.00.

Dr. _____

Address _____

Milk Inspectors' Meeting

The International Association of Milk Sanitarians will hold its 26th annual meeting in Louisville, Kentucky, October 11-13, 1937. Among the historic and scenic attractions offered those who attend, are: Lincoln's birth-place, famous stock farms, Churchill Downs, Mammoth Cave, mint juleps, old white burley, etc.

The program will include a discussion of training for milk inspectors, legislation, court decisions, Bang's disease, plumbing defects, pasteurization, standards, mastitis test, laboratory practices, etc.

May we send you **FREE** *the new*
SQUIBB VETERINARY HANDBOOK
?
and Price List; describing in detail almost 200 Veterinary Specialties; in many cases with indications and recommended dosages; quoting regular veterinary hospital discount prices.
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Veterinary and Animal Feeding Products Division

TESTIMONIAL

One "Old time" Veterinarian stated in conversation, "I've used Missouri Valley Serum for over twenty years with excellent results. I've never had any sickness in pigs following vaccination that could be blamed on the serum and never have asked for serum for re-treatment. I would not think of changing brands of serum."

If you really want to use a good reliable brand of Serum that will give excellent results—order "Missouri Valley."

DRUGS AND BIOLOGICS carried by all of our Branches and Distributors—place your order with the one nearest you.

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50 N. 2ND ST. *Member of Associated Serum Producers* KANSAS CITY, KANSAS

A VETERINARIAN rarely has a monkey for a patient, but when he has, he will find that a monkey will respond just as readily to Antiphlogistine treatment as will any other animal.

Antiphlogistine

for open sores and other skin lesions; for pneumonia and other deep-seated inflammations in the veterinary patient.

Sample and literature sent on request

The Denver Chemical Manufacturing Company
163 VARICK STREET . . . . . NEW YORK, N. Y.

Army Veterinary Service

The promotion of Lt. Col. Geo. H. Koon and Lt. Col. Daniel B. Leininger to the grade of colonel is announced.

The promotion of the following named officers to the grade of lieutenant colonel is announced: Allen C. Wight; Elwood L. Nye; Chauncey E. Cook; Kenneth E. Buffin; Wm. R. Wolfe; Stanley C. Smock; Howard M. Savage; Burlin C. Bridges; James E. Noonan; Josiah W. Worthington; Fred C. Waters; Harry E. Van Tuyl; Louis L. Shook; Daniel H. Mallan; Louis G. Weisman; James A. McCallam; Harry J. Juzek; William H. Dean; Solon B. Renshaw; Frank H. Woodruff; Will C. Griffin; Lloyd C. Ewen; Charles O. Grace; Edward M. Curley; James R. Sperry; Floyd C. Sager; Henry E. Hess; Forest L. Holycross; Joseph F. Crosby; Raymond I. Lovell; Ralph B. Stewart; Charles M. Cowherd; Francois H. K. Reynolds; Sawyer A. Grover; Charles S. Williams; Fred W. Shinn; Philip H. Riedel; Irby R. Pollard; Frank C. Hershberger; Clifford E. Pickering; Frank B. Steinkolk; Raymond Randall; Seth C. Dildine; Joseph H. Dornblaser; George L. Caldwell; Jacob L. Hartman; John H. Kintner; Samuel G. Kielsmeier; Peter T. Carpenter; Oness H. Dixon, Jr., and John W. Miner.

The promotion of Harry R. Leighton, Verne C. Hill and Elmer W. Young to the grade of major is announced.

The promotion of Wm. E. Jennings and Curtis W. Betzold to the grade of captain is announced.

The appointment of Capt. Earl G. Kingdon, Veterinary Corps Reserve, as first lieutenant in the Veterinary Corps, Regular Army, with rank from October 1, 1937, and his assignment to duty at Fort Bliss, Texas, is announced.

Retired: Lt. Col. John K. McConeghy for physical disability.

Died: Maj. Henry W. Peter (Ret'd), Allentown, Pa.; Maj. Joseph N. Hornbaker (Ret'd), St. Petersburg, Fla.; Capt. Lester E. Willyoung (Ret'd), Princeton, W. Va.

Veterinary Corps Reserve

The following officer has been promoted to the grade of major: Thomas B. Carter, Gresham, Oregon.

The following named officers have been promoted to the grade of captain: Houston Odom, Auburn, Ala.; John H. Knapp, Columbus, Ohio; Guy H. Todd, St. Louis, Mo.; Wm. H. Harlan, Oklahoma City, Okla.; Fred H. Miller, Wausau, Wis.; Robert N. Earhart, Columbus, Ohio; Alfred N. Richey, Lanesboro, Iowa; Lester A. Treat, Bennington, Vt.; Eugene Hodgson, Oklahoma City, Okla.; Mervyn Starnes, Dallas, Texas; Lauren L. Bechtol, Bryan, Ohio; Walter G. Galloway, Lafayette, Ind.; Earl G. Kingdon, Salt Lake City, Utah, and Donald R. Morgan, Vancouver, Wash.

The following named officers have been promoted to the grade of first lieutenant: Glen C. Brandon, Columbus, Ohio; John R. Durigg, Oxford, Ohio; Louis W. Gaydosh, Kansas City, Mo.; Wm. L. Jones, Leavenworth, Kans.; John E. B. Mouw, Edgerton, Minn.; Theo. C. Fitzgerald, Columbus, Ohio; Raymond W. Hayes, Galesburg, Ill.; Howard R. Hinchman, Canal Winchester, Ohio; Chas. B. Linzinmeir, Columbus, Ohio; Carl V. McKenzie, Columbus, Ohio; John L. McKitrick, Columbus, Ohio; Marion W. Scothorn, Newkirk, Okla.; Warren L. Tanner, Van Wert, Ohio, and Bernard H. Gibson, Newark, Ohio.

New assignments to active duty with the CCC: Captains Earl T. Martin and Harry H. Emerson.

First Lieutenants Marvin H. Jacobs; Garrett H. McNay; Wm. G. Phifer; Thomas M. Thompson; Chester N. Harden; Karl H. Willers; Joseph L. Cavanaugh; Martin G. Schmidt; Geo. R. Flack; Lauren L. Bechtol; Louis B. Bate; Lucius N. Butler; H. R. Collins; Walter W. Fechner; Edwin M. Crawford; Charles E. Robinson; John M. Broadwell; Clinton L. Gould; George M. Wilson; William H. Hervey; Emmet W. Paul; Edward J. Watson; Harry R. Lancaster; George Cohen; Richard E. Omohundro; Ben N. Winchester; Everett Anderson; Raymond Gathmann; Willard R. Merchant, and Willard M. Van Sant.

The following have been commissioned recently in the grade of first lieutenant:

James R. Barry, Waterloo, Iowa; Harold L. Geick, Milwaukee, Wis.; Frank L. Meyer, East Lansing, Mich.; Luther D. Meyers, Sacramento, Calif.; William K. Riddell, Santa Barbara, Calif.; Karl L. Sutton, Morenci, Mich.; Gordon D. Boyink, Rochester, N. Y.; Sam S. Fisher, Austin, Mich.; Walter A. Lawrence, Oklahoma City, Okla.; Maurice K. Walters, Fort Worth, Texas; Leslie A. Weight, Wailuka, Territory of Hawaii; Glenn C. Holm, Rexburg, Idaho; Andrew L. Thome, Atlanta, Ga.; Wm. P. Barchfeld, Pittsburgh, Pa.; Joseph M. Black, Marshall, Texas; Frank W. Brundrett, Dallas, Texas; Horace R. Collins, Jr., Manhattan, Kans.; John E. Craige, Philadelphia, Pa.; Edwin M. Crawford, Manhattan, Kans.; Blakey T. Deal, Philadelphia, Pa.; James G. Eagelman, Jr., Geigertown, Pa.; Walter W. Fechner, Alta Vista, Kans.; George R. Flack, Philadelphia, Pa.; Woodrow W. Harkins, Alpine, Ala.; Wiley H. Horn, Forth Worth, Texas; Homer T. Martinez, Hebbronville, Texas; Edward C. Preston, Philadelphia, Pa.; Carl M. Richter, Elizabethville, Pa.; Irving J. Sadow, Brooklyn, N. Y.; Israel M. Saturen, Philadelphia, Pa.; Francis J. Schott, Nacodoches, Texas; Lawrence E. Spong, Enterprise, Kans.; Robert J. Stadler, New Britain, Conn.; Charles R. Wainright, Tulsa, Okla.; Douglas F. Watson, Mt. Kisco, N. Y.; James H. Watson, Shawnee, Kans.; Wayne C. Weaver, Andreas, Pa.; Horance R. Willard, Giddings, Texas; Everett T. Anderson, Atlanta, Ga.; Don L. Caswell, Ames, Iowa; George Cohen, Springfield, Mass.; Raymond A. Gathmann, Atlanta, Ga.; Clyde R. Moses, Auburn, Ala.; Charles S. Roberts, Gold Hill, Ala., and Linden M. Alcorn, Guthrie Center, Iowa.

Earlyne

EXCLUSIVELY CONTAINED IN CHAPPEL FOODS MAKES INOCULATION AGAINST DISTEMPER MORE EFFECTIVE!

Earlyne is a combination of the known health factors of benefit to dogs. Two food factors have recently been established as important agents in helping guard against both respiratory form and intestinal form of Distemper.

These two factors occur in adequate unitage in Earlyne with which Chappel Foods are impregnated.

Distemper inoculations are far more effective and death losses reduced when patients have been pre-conditioned. Chappel Foods containing Earlyne are ideally suited for this purpose. For further details, write Chappel Bros. Inc., 503 Peoples Avenue, Rockford, Illinois.

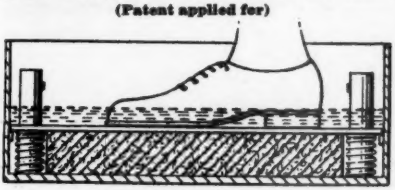
Recommend

KEN-L-RATION

CONTAINS *Earlyne*

Ketchum Foot Disinfector

(Patent applied for)



A portable box, filled with liquid disinfectant for cleaning footwear to prevent carrying germs into Barns, Poultry Houses, Etc.

When foot is placed on perforated plate inside box, the disinfectant flows up, out of the sponge like filler beneath, around the footwear.

Made of all rust proof metal with a tight cover and convenient handle for carrying and may be transported without spilling or splashing.

Price:

East of the Mississippi, $5.50, delivered
West of the Mississippi, 6.00, delivered
West of the Rockies, 6.50, delivered

KETCHUM MFG. CO.

DEPT. A. LUZERNE, N. Y.

Mrs. Lawrence A. Mosher died at her home, in Atlanta, Ga., September 25th, of a heart attack. All who attended the Atlanta meeting of the A. V. M. A., particularly the women, will remember her for her kindly and successful efforts for their entertainment while there.

The deceased is survived by her husband, Dr. L. A. Mosher, and two sons.

* * * *

Wallace W. Eagle, 53, died at his home in Kansas City, Kans., Sept. 10, 1937, after an illness of several months. Doctor Eagle was the youngest of five brothers, all veterinarians, of whom only Dr. R. Fred Eagle, Chicago, vice president of Wilson & Company, packers, and Dr. T. J. Eagle, Albany, Mo., survive. He was graduated from the Kansas City Veterinary College in 1906 and had spent most of his professional life in the manufacture of anti-hog cholera serum and virus.

Doctor Eagle is survived by his widow and the two brothers mentioned.

* * * *

After freedom from foot-and-mouth disease for about three years, The Netherlands have suffered an invasion from Belgium. The disease has spread over the greater part of the country and the authorities have instituted drastic measures to combat it.

for feline respiratory infections—"distemper"

Norden Certified

MIXED BACTERIN FELINE

Each 2 cc contains full immunizing dose of B.Felisepticus, Staphylococci, and B.Coli, (feline origin). Also for certain types of enteritis of bacterial origin. (6-2 cc or 20 cc. 75c)

●

for ringworm

MALGREEN ASTRINGENT

contains malachite green, salicylic acid, tannic acid, etc. Excellent results reported with malachite green preparations by Rawson (Vet. Med. May 1936) and others. (Doz. ½ oz. with applicators $1.25)

●

for fleas

DERRISECTO

Contains Powd. Derris Root (Rotenone), Pyrethrum. Quickly kills fleas. Non-irritating. Easy to use. (Doz. 4 oz. shaker cans $2.70)

●

for internal parasites

TETRALENE CAPSULES

Highly efficient, safe, practical anthelmintic. (100 3 min. caps. $0.50; 100 ½ cc caps. $0.80; 100 1 cc caps. $1.10)

●

Cano-Feline Tonic Tablets

Reconstructive, especially for distemper convalescents. For anemia, etc. Contains sodium arsenate, copper sulphate, reduced iron, and 1/400 gr. strychnine sulphate. 100, 30c; 1000, $1.85.

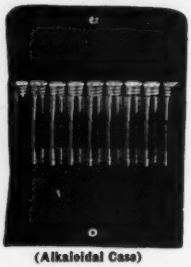
ORDER FROM NORDEN

NORDEN LABORATORIES

"The Mark of Quality"

LINCOLN NEBRASKA

STRASCO ALKALOIDAL TABLETS



(Alkaloidal Case)

The nine vials of alkaloidal tablets furnish ample medication for the average case of sickness in Kittens and small Cats.

These tablets are exceptionally small which enables the Veterinarian to carry nine vials holding approximately 250 tablets each in a handy pocket case.

For your convenience we will supply this case, filled, at $6.00 or supply the case free with 1,000 each of the above formula at $12.00.

R. J. STRASENBURGH CO.
Rochester, N. Y.
Pharmaceutical Chemists Since 1886

Finis Written to the Achieving of Prof. Oluf Bang

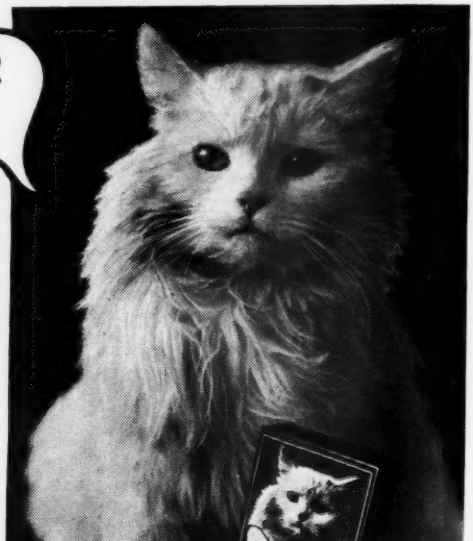
The recent death of Professor Oluf Bang of Copenhagen at the age of 56, brings to a close the career of one of the most illustrious of veterinarians. A son of the famous Professor Bernhard Bang, Oluf Bang entered the medical department of the University of Copenhagen in 1899, but soon transferred to the veterinary department, in which he remained as student or faculty member till his death. As professor of Special Pathology and Chief of the Medical Clinic, Professor Bang carried out much original research including a demonstration that a leucemia of fowls is due to a filterable virus, widely known work on tuberculosis, Johne's disease and Bang's disease.

Dr. Oluf Bang visited America in 1934 in connection with attendance at the 12th International Veterinary Congress in New York. He was among those who visited Chicago on a post-congress tour. It was the writer's fortunate privilege to pilot him through the extensive medical exhibit at the Chicago World Fair. Included in that exhibit was a multiposter picture machine, an electrically operated device which threw on a screen in rotation, and over and over, likenesses and brief biographies of "The 100 leading bacteriologists of the world." It included famous bacteriologists, both living and dead. Among the number were

DOCTOR, I'LL BE YOUR FRIEND FOR LIFE!

Cats like Milk-Bone Crumbs

This crisp crunchy food gives teeth and gums the exercise that Nature intended for cats to have. It helps guard against tooth troubles resulting from too much soft food and other diet deficiencies. Milk-Bone Crumbs gives cats and kittens some of the vital food elements so necessary for the alert bearing and glossy coats that you associate with rugged health. It is a scientifically-balanced ration of beef, milk, cereal, food minerals, irradiated yeast, and cod liver oil. It is rich in vitamins A, B, D, E, and G. When you feed or recommend Milk-Bone Crumbs your patients will appreciate your thoughtfulness!



WEEN

For Cats as well as Dogs

Although developed especially for feeding orphan puppies, experience has shown that WEEN gives excellent nutritional results for kittens and cats.

Nutrition is frequently at the bottom of difficulties in breeding and growing pets and WEEN is the answer to many nutrition problems.

AMPLE VITAMINS AND MINERALS—The vitamin content is high, scientifically balanced to include liberal amounts of Carotene (Pro-Vitamin A), Vitamin B_1, Vitamin D and Vitamin B_2 or G (complex), essential not only for maintenance, but for vitality and vigorous normal growth. The milk-protein, lactose, minerals and the fats used in the formula for WEEN are present in such proportions as to be well assimilated, and to promote normal digestion.

Write for professional sample and full information.

LIFE PRODUCTS, INC. 5TH FLOOR COOK BLDG. 46TH & PROSPECT AVE. **Cleveland, Ohio**

two veterinarians—Dr. Bernhard Bang and Dr. Oluf Bang.

Without any preparation for what he was to see, Doctor Bang's attention was directed to the multiposter picture machine. He was fascinated by the pictures and in a running comment, added personal incidents to the biographies of perhaps one-fourth the number. His pleasure was far greater than his surprise when his late father's picture was flashed on the screen; but when his own picture flashed on, only astonishment was registered, a certain indication of that modesty which is truly an attribute of the great.

That Oluf Bang's professional career should have extended over but little more than half the period of that of his distinguished father (Prof. B. Bang died June 22, 1932 at the age of 84 years) is an incalculable loss to medical science.

New York Eradicates Bovine TB

October 1, 1937, New York was officially designated by the U. S. Department of Agriculture as a modified accredited area, indicating its practical freedom from tuberculosis of cattle. New York thus becomes the 46th state in which all counties are in the modified accredited status.

In continental United States there are now no counties east of South Dakota that have not been designated as modified accredited areas, and only

FISTONE

★ An acknowledged successful treatment that is administered with the feed for fistula of the withers, fistula of the poll, quittor and affections of similar nature, where other means have failed.

Fistone has also made possible the profitable treatment of chronic cases of fistulous withers that were impossible to handle surgically for economic reasons.

Convincing proof of its merit is its imitations. Fistone is regularly employed by veterinarians in every state in the union, in Canada and England.

OUR SLOGAN: *"When everything Else Fails, Try Fistone"*

COUPON

The Fistone and Appliance Company, College Corner, Ohio.

Enclosed please find check for $8.00, for which send me one dozen 12-ounce boxes of Fistone (trial order) once only. (Regular price $10.) One-half dozen boxes $5.00.

Dr. _____

Address _____

one other State, California, in which there are any non-accredited counties.

Tuberculosis among cattle existed to a very great extent in many of the counties in New York when the work of eradicating it was undertaken cooperatively by the state and federal authorities in 1919. Since that time there has been a great increase in the volume of work conducted each year, and during the last three years it was possible to increase the volume of the work because of the additional federal funds made available for the purpose. It was necessary, however, for the state of New York to expend a large sum to accomplish this achievement.

In South Dakota there are 17 non-accredited counties. The work has been proceeding well in South Dakota, but recently it has been necessary to temporarily discontinue most of it on account of the outbreak of anthrax.

In California there are 37 counties in the non-accredited area, but state and federal employees are working on the project in that state, with prospects that some of these counties will be added to the modified accredited area within the next few months.

MASON'S *Kennel Fences*

Best for Dog Hospitals and Boarding Kennels

$69.55 and up

Mason's are Real Kennel Fences—Strong, Good Looking and sold under a Money Back Guarantee to hold the largest and strongest dogs. Used and approved by best Kennels everywhere.

SEND FOR FREE CATALOG

Describing Permanent and Movable Dog Fences, Kennel Stalls, and Gates at Low Direct Factory Prices.

MASON KENNEL FENCE CO., Box 77, Leesburg, Ohio

PET CASKETS

Add to your income by offering this friendly, helpful service when the need arises. Kennel Caskets come in 4 sizes at inexpensive prices your clients can afford. Send for descriptive literature and wall plaque.

KENNEL CASKET CO.

1012 Wheaton Ave. Kalamazoo, Mich.

Whether it be a

Pedigreed Persian Cat
A Siamese Cat, or
Just an ordinary Tabby

the use of

Antiphlogistine

in feline practice renders valuable service in the treatment of *wounds, abscesses, sprains,* and wherever it is desired to reduce *inflammation* and *congestion.*

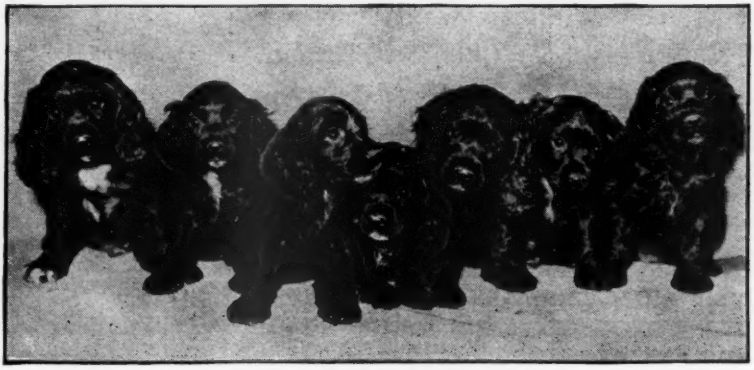
Sample on Request

THE DENVER CHEMICAL MFG. COMPANY

163 Varick Street New York, N. Y.

PARD generation-feeding tests on dogs now going into 4th year

at Swift & Company's experimental kennels



● Typical litter at Swift & Company's experimental kennels—seven excellent cocker pups. The mother, who has never tasted any food but Pard, whelped easily, and had plenty of rich milk for this large litter. The pups were themselves weaned to an exclusive Pard diet at 6 weeks.

This Swift & Company product contains: 55% Beef Meat Food Products (dry weight basis) . . . Whole Wheat . . . Barley . . . Tomato Puree . . . Dry Skim Milk . . . Edible Bone . . . Cod Liver Oil . . . Salt

●By the summer of 1934, Swift & Company's laboratories had completed a research project in canine nutrition . . . had evolved a formula that had supported standard white rats through 3 successive generations, with normal responses in all life processes—growth maintenance, reproduction and lactation.

Then a similar test was begun with dogs—the famous test that has by now reached the fourth successive canine generation. Swift established experimental kennels in connection with its Chicago Research Laboratory. Puppies of 3 representative breeds—wire-haired fox terriers, chow chows and cocker spaniels—were obtained as foundation stock. All were registered and pedigreed, had known histories. They were immediately placed on an exclusive diet of Pard and water.

How these puppies and their three generations of Pard-fed descendants grew will be described in detail as this series of advertisements progresses. Swift & Company, Chicago.

PARD SWIFT'S *CANINE-TESTED* FEEDING FORMULA

A product of Swift & Company

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

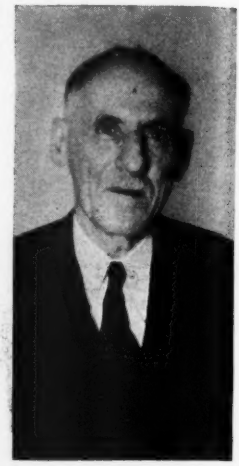
Detroit Veterinary Supply Co.

460 West Jefferson Avenue, Detroit, Michigan

Canadian Branch, 139 Sandwich St., Windsor, Ontario

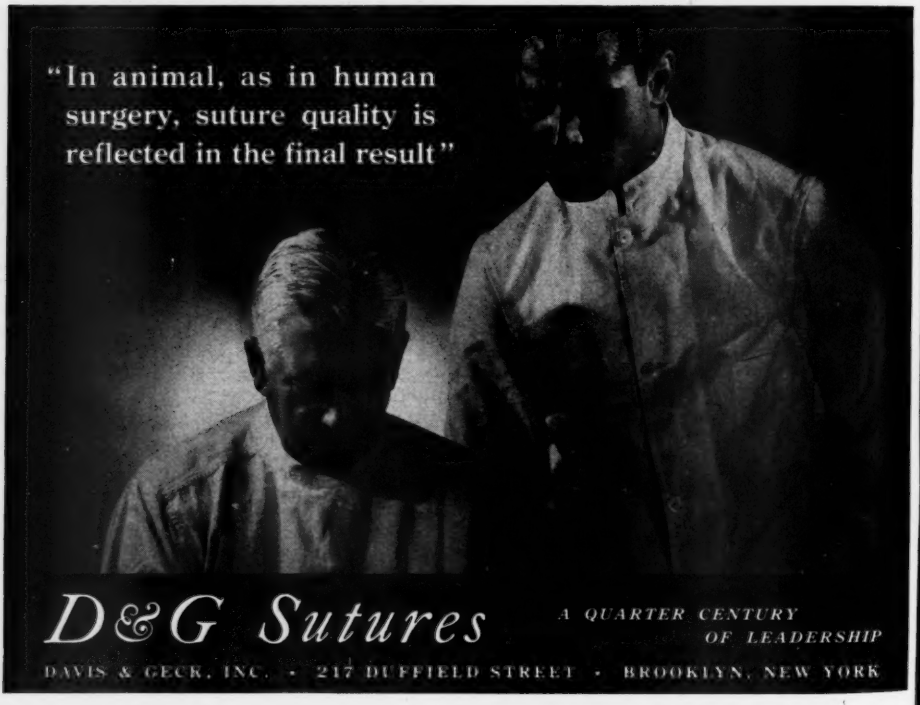
Cotton Retires From the B. A. I.

William E. Cotton, superintendent of the Animal Disease Station of the Bureau of Animal Industry, U. S. Department of Agriculture, Beltsville, Md., and widely known in veterinary and livestock circles, retired from the Federal service September 30, 1937, because of age.



DR. W. E. COTTON

Doctor Cotton entered the Bureau of Animal Industry in 1893 and spent 44 years continuously in its employ. Though engaged in various lines of veterinary activity, he is best known for his researches with infectious diseases of animals and, particularly, methods of controlling Bang's disease. He is also a recognized authority on tuberculosis, foot-and-mouth disease and related maladies.


"In animal, as in human surgery, suture quality is reflected in the final result"
D&G Sutures
A QUARTER CENTURY OF LEADERSHIP
DAVIS & GECK, INC. • 217 DUFFIELD STREET • BROOKLYN, NEW YORK

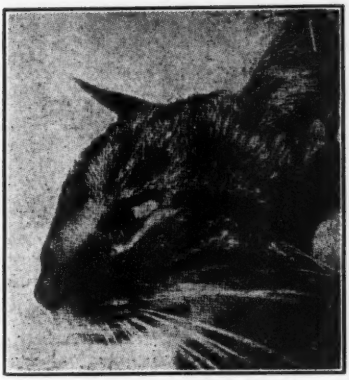
The

Potentiality

of

Feline Medicine

lies in acquiring more knowledge about the habits, nutrition and ailments of the domestic cat and its wild contemporaries in captivity.



—From The Messenger, Dec. 1930

A case of tuberculous ketatitis

Among the H-G Feline Remedies

(Catalogued in current issues of The Messenger)

Liquids

Bismogen—A classical gastric sedative based upon the action of milk of bismuth.
Collyrium—Excellent feline eye lotion, astringent, antiseptic, anodyne.
Flavored Liquid Cascara—Suitable general-purpose cathartic. Mild but certain.
Haglogen—Reliable, safe but powerful antiseptic for wounds and skin disinfection.
Magnesium Sulphate Elixir—Grateful hydragogue (saline) cathartic.
Nutone—A nourishing supplement for the diet of the sick and convalescent.
Pulex-Soap—Dependable flea soap. Non-irritant and non-toxic.
Sulphodine-Tar Compound—Iodine-peanut oil-sulphur mange remedy.
Vermitol (Canine)—The way to use oil of chenopodium in the feline species.

Tablets and Capsules

Bryonia-Aconite Tablets—For the acute stage of fevers.
Calci-Nephrin Tablets—For rickets, mineral-deficient food, remineralization.
Cascarin Compound Tablets—A cathartic for routine use in digestive disorder.
Creso-Iodine Tablets—For febrile, pulmonary disorders.
Hemogen Tablets—Restorative, tonic, hematinic.
Salol Tablets, 1 Gr.—For alimentary antisepsis.
Sulphogen Tablets—For chronic eczema. Laxative, sulphur medicant.
Eucamphol Pearls—Creso-guaiacol febrifuge.
Santanoid (Capsules)—Grateful tapeworm and round-worm remedy for kittens and cats.
Areco-Santonin Capsules—Combined tapeworm and roundworm anthelmintic.

Powders

Haglogen Dressing Powder—The safe, non-toxic wound powder for the feline species.
Phenobarbital (Hypodermic) Powder—For strychnine poisoning and sedation.
Derris Compound Powder—For flea infestation.
Vitogen Powder—Vitamin and mineral supplement for the diet.

Ointments

Haglogen Ointment—The safe healing ointment.
Resorcinated Ointment—Antipruritic and parasiticide.
Sulphurated Ointment—For mange, eczema, pruritus.

A glance through this incomplete list testifies to our interest in feline medicine

The Haver-Glover Laboratories

KANSAS CITY, MO.

(and Service Branches)

NEW YORK, N. Y. **ATHENS, ALA.** **SAN FRANCISCO, CAL.**
LANSING, MICH. **CHICAGO, ILL.** **DALLAS, TEXAS** **LOS ANGELES, CAL.**
ALBANY, GA. **DENVER, COLO.** **CHAMPAIGN, ILL.** **OREGON CITY, ORE.**

Member of the Veterinary Exhibitors' Association

Swine erysipelas, one of the most serious swine maladies and long prevalent in Europe, has been increasing in the United States. It was first reported here in 1921 but there were only a few isolated cases until 1930 when an outbreak was reported in South Dakota. Since that year the malady has appeared in practically all states.

Observations indicate infection is spread through contact of diseased with healthy animals. Infection also is transmissible to man, particularly when there are scratches or cuts on the hands. Young pigs three months to one year of age are usually most susceptible, although older animals may easily contract the disease during serious outbreaks.

The acute form closely resembles hog cholera. In some cases the disease may progress into the chronic form without showing well-marked symptoms. Mortality is comparatively high in some herds and additional losses result from the effects of the disease in the partially recovered animals. Enlargement of the joints, or arthritis, is the most frequent sequel of the chronic form. The so-called "diamond skin disease" is another chronic form of the disease.

Strict sanitary measures are important in preventing swine erysipelas. Removing the healthy animals to clean pastures and treating the sick ones with antiswine erysipelas serum, beneficial in the acute form of the disease, is the best way

Control Blackleg

By Using

Blackleg Bacterin (*Kinsley*)

Pertinent facts:

Blackleg primarily affects young cattle, but mature cattle, sheep, goats and even swine may become affected. It is a specific soil infection disease and is characterized by an emphysematous tumefaction. Being a soil infection, blackleg may occur in cattle on grass or on dry feed.

Blackleg is essentially a disease of muscular tissue and the muscles of the legs or loins are usually involved, however, the lesions may be confined to internal structures such as the heart or intercostal muscles. Hence, the necessity of a careful autopsy when lesions are not found in the usual locations.

The lesion involving muscle tissue and adjacent aerolar tissue consists of a deep red or black tumefaction that is permeated with gas and from which there emanates a peculiar and quite characteristic odor.

Blackleg can usually be differentiated from malignant oedema by the putrid odor of the latter and the pale straw color of the lesion of malignant oedema.

Kinsley Blackleg bacterin is produced by the growth of pure cultures of Clostridium Chauvei in specially prepared liquid medium.

Our Blackleg bacterin is composed of the whole culture and thus contains not only the dead and disintegrated germs, but also the products of their growth in the specially prepared culture media. Thus, the Kinsley Blackleg bacterin, like other Kinsley bacterins, is an efficient product and is par-excellent for the prevention of Blackleg.

For the convenience of the practitioner, the dosage of the Kinsley Blackleg bacterin is 5 cc, 10 dose and 50 dose containers are provided.

This is Blackleg season. Have Kinsley Blackleg bacterin on hand and be prepared.

Price is regular and the usual discounts are given.

Write, 'Phone or Wire

KINSLEY LABORATORIES

1103 East 47th Street Kansas City, Missouri

FOR THE PREVENTION AND CURE *of* CANINE BLACKTONGUE

Veterinarians will be interested in the newest developments in connection with the prevention and cure of canine blacktongue.

A recent announcement* indicates that nicotinic acid and nicotinic acid amide are active in the cure of canine blacktongue—sometimes referred to as Stuttgart's disease or canine typhus. Both of these products have been demonstrated to cure this canine deficiency disease, either by using them prepared from liver, or as synthesized in the laboratory.

Life Products, Inc. offer the veterinary profession nicotinic acid produced synthetically in our laboratory, either in crystalline form, or in a prepared solution containing one daily dose (30 mg.) per teaspoon. The latter is available in 4 ounce bottles containing approximately 35 doses at $1.75, postpaid.

*J.A.C.S. 59:1767:1937.

LIFE PRODUCTS, INC.
4614 PROSPECT AVE.
CLEVELAND OHIO

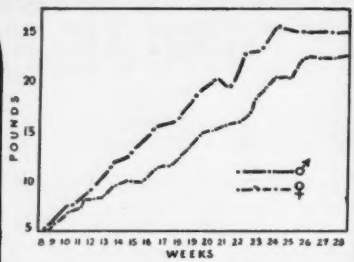
For Feline Conjunctivitis

First use a drop of cocaine, if available, then cleanse with a 1% solution of

THERAPOGEN

Samples and literature sent upon request.

THEODORE MEYER EST.
MFG. CHEMISTS
213 S. 10TH STREET PHILADELPHIA, PA.
DEPT. V



Growth chart of Beagle Puppies fed exclusively on TI-O-GA Puppy Food. Full growth was obtained in 6½ months

BEAGLE PUPPIES
attain full growth in 6½ months

At the TI-O-GA Experimental Kennels, a litter of beagles was brought to full growth in 24 weeks on an exclusive diet of TI-O-GA Puppy Food. As far as we know, this constitutes a record growth for puppies of this breed.

The remarkable growth record attained on TI-O-GA Dog and Puppy Foods is but one example of the benefits which have emanated from our 7 years of experimentation in the care and feeding of dogs.

Even more important, from the standpoint of individual breeders and kennel owners, is the fact that from these experiments we have evolved a formula which is exceptionally low in *cost per pound of nutrition.*

You'll find TI-O-GA to be worthy of your highest professional endorsement. If interested in dispensing this scientifically proved correct dog food, write for further information. Address Dept. M-69, Balorations, Inc., Division of Tioga Mills, Waverly, N.Y.

FREE
Treatise on "Producing Puppies Profitably" by Leon F. Whitney.

TI·O·GA
complete
DOG *and* PUPPY FOODS

to check an outbreak. Herds in which a high percentage of the animals display acute symptoms may return to normal after serum treatment without reaching the chronic stage. The serum has little value in the chronic form.

* * * *

The East Central Iowa Veterinary Association held its regular monthly dinner-meeting at Cedar Rapids, May 13. The affair was the annual Ladies Night and was attended by 54 veterinarians and their ladies from seventeen counties.

C. N. McBryde, research scientist on swine diseases for the United States Bureau of Animal Industry, Ames, presented an interesting and informative paper on "A Study of So-Called 'Breaks' and the Róle of Salmonella Suipestifer in Causing Pneumonia in Swine."

Wm. C. Vollstedt of Dixon, presented a paper on "Dietary Errors and Deficiencies of Swine and the Relation of Diet to Post-Vaccinal Losses in Swine Droves." Doctor Vollstedt pointed out the dangers of owner gullibility in purchasing stock powders, tonics and patent feeds only on the "guarantee" of strange white-collar agents.

John B. Bryant, Mt. Vernon, led the discussion of Doctor McBryde's and Doctor Vollstedt's papers. Joining prominently in the discussion were J. W. Griffith and A. R. Menary of Cedar Rapids; C. E. Bassler of Ainsworth and others.

Periostine

Horse Back To Work In Three To Five Days

It is a powerful antidote to inflammation occurring in the periosteum, articulations, bursæ, tendons, ligaments; also where there is pain, exostosis or lameness. Usually only one application is necessary. One bottle is sufficient to treat three or more cases.

Endorsed by almost every veterinarian that has given it a trial.

FREE Booklet—"Reminders in Diagnosing Obscure Lameness."

Price per bottle..$2.00
Three bottles 5.00

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Army Veterinary Service

Captain Curtis W. Betzold is relieved from his present assignment and duty at the Army Medical Center, Washington, D. C., effective at such time as will enable him to proceed to New York, N. Y., and sail on transport scheduled to leave that port on or about January 6, 1938, for the Philippine Department, for duty with the Veterinary Corps.

1st Lieut. Ray S. Hunsberger is assigned to the Army Medical Center, Washington, D. C., effective upon completion of his present tour of foreign service in the Philippine Department.

By direction of the President, 1st Lieut. Andrew J. Sirilo is honorably discharged from the service of the United States, with one year's pay, under the provisions of Section 5, of the Act of Congress approved April 23, 1908 and Section 24c of the Act of Congress approved June 4, 1920.

Lt. Colonel John H. Kintner is detailed for duty as port veterinarian, San Francisco port of embarkation, Fort Mason, Calif., in addition to his other duties at Fort Mason, Calif., vice Colonel Alfred L. Mason, hereby relieved.

1st Lieut. Velmer W. McGinnis is relieved from his present assignment and duty at the Army Medical Center, Washington, D. C., effective on or about November 3, 1937, and will proceed to Fort Slocum, N. Y., for temporary duty until such time as will enable him to sail on the transport scheduled to leave New York, N. Y., on or about March 15, 1938, for the Panama Canal Department. Upon arrival in Panama he will report to the commanding general for assignment to duty with the Veterinary Corps.

Major Laurence R. Bower is relieved from further assignment and duty at Fort George C. Meade, Md., effective in time to proceed to New York, N. Y., and sail on the transport scheduled to leave that port on or about January 6, 1938, for San Francisco, Calif.; upon arrival in San Francisco will proceed to March Field, Calif., and report for duty.

The promotion of 1st Lieut. James B. Nichols to the grade of captain, with rank from October 15, 1937, is announced.

Lt. Colonel Wm. H. Dean is detailed as attending veterinarian at Benicia Arsenal, Calif., in addition to his other duties at the Presidio of San Francisco, Calif.

The appointment of 1st Lieut. John Kenneth Allen, Veterinary Corps Reserve, Fort Snelling, Minn., as first lieutenant in the Veterinary Corps, Regular Army, with rank from October 29, 1937, and his assignment to duty at Fort Bragg, N. C., is announced.

Veterinary Corps Reserve

New acceptances—First Lieutenants: Bert Albert Menig, Olympia, Wash; John Wesley Thimmig, Wellington, Colo.; Jack Edward Wittrock, Spokane, Wash. John J. Arnold, Stilesville, Ind.; Theodore M. Barr, Detroit, Mich.; Guy W. Bayles, Newton, Ill.; Richard D. Bertotti, St. Charles, Mich.; Leonard A. Bowstead, DeWitt, Iowa; James L. Boydston, East Lansing, Mich.; Raymond N. Brenny, Foley, Minn.; William E. Brown, Paullina, Iowa; Clark W. Burch, Manhattan, Kans.; Lucius N. Butler, Jr., Phoenix, Ariz.; Donald R. Cordy, Compton, Calif.; Lewis A. Dykstra, Monroe, Iowa; Paul C. Garner, Chetek, Wisc.; Pearl H. Hand, Salt Fort, Okla.; Charles G. Hanna, Marion, Iowa; Henry E. Harriman, Kanawha, Iowa; Earl H. Harrison, Lawrence, Kans.; Isaac E. Hayes, Newcomerstown, Ohio; John G. Hemphill, Chanute, Kans.; Milo J. Henshaw, East Lansing, Mich.; Russell J. Henshaw, East Lansing, Mich.; William H. Hervey, Belle Plaine, Kans.; Irvin P. Irwin, Wilsey, Kans.; James R. Ketchersid, Hope, Kans.; George K. Lang, Longmont, Colo.; Russell M. Madison, Slayton, Minn.; Lawrence Minsky, El Monte, Calif.; Richard E. Omohundro, Wellington, Kans.; Lee T. Railsback, Langdon, Kans.; Howard C. Raven, Meriden, Conn.; Charles E. Robinson, Manhattan, Kans.; Benjamin Rosenfeld, New York, N. Y.; Hans H. Ruhland, Lansing, Mich.; Carl J. Schubert, Slinger, Wis.; Benjamin J. C. Sinkler, Baxter, Iowa; Warren B. Thurber, Rochester, Minn.; Irwin J. Twiehaus, Independence, Mo.; Willard M. Van Sant, Dixon, Calif.; George M. Wilson, Alhambra, Calif. Ben N. Winchester, Baltimore, Md.; Alvin R. Wingerter, Lansing, Mich.; Earl J. Wueliner, Menominee, Mich.; Hugh B. Thaxton, College Station, Texas; Everett H. Akins, Willoughby, Ohio; Howard P. Buckley, Belleville, N. J.; Franklin F. Christofferson, Mt. Vernon, Wash.; Ernest D. Copple, Okanogan, Wash.; John G. Cranfield, Santa Monica, Calif.; Stuart M. Dingwall, Seattle, Wash.; Kenneth Erickson, Hanley Falls, Minn.; LeRoy T. Fisher, Stillwater, Okla.; George C. Folger, Seattle, Wash.; Clinton L. Gould, Hydesville, Calif.; John H. Melwig, Toledo, Ohio; Donald D. House, Tacoma, Wash.; Wilfred C. Jackson, Bucyrus, Ohio; Wesley O. Keefer, Akron, Ohio; Marion L. Ledgerwood, Seattle, Wash.; Willys E. Lord, Breckenridge, Minn.; Philip L. McClave, Fort Lupton, Colo.; James C. McIntyre, Fort Collins, Colo.; Louis J. Maher, Highland Park, N. J.; Hilding M. Marlowe, Kent, Wash.; Edward T. Marsh, Waupun, Wis.; Otto L. Montgomery, Lafayette, Colo.; William E. Mottram, San Francisco, Calif.; Wilson M. Pang, Honolulu, Hawaii; Emmet W. Paul, San Francisco, Calif.; Louis J. Payen, Folsom City, Calif.; Linn S. Poley, Colorado Springs, Colo.; Werner Pundt, San Francisco, Calif.; Robert S. Russ, Tacoma, Wash.; Harold O. Sheetz, Woodstock, Va.; Albert A. Taylor, Arcata, Calif.; John W. Vandeven, Columbus, Ohio; Edward J. Watson, San Pedro, Calif.; Thomas J. Wheelin, Tucson, Ariz.; James A. Brennan, Lockport, N. Y.; Salvatore M. Dragotta, Marlboro, N. Y.; Albert N. Glassman, Hartford, Conn.; Donald V. Hughes, Middletown, N. Y.; Abraham A. Levinson, New York, N. Y.; Ray S. Pyles, Kansas City, Kans.; Herbert Racoff, Bronx, N. Y.; Ward D. Redman, Avoca, Iowa; Morris Siegel, Spring Valley, N. Y.; Herman

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Termination of assignment to active duty with CCC: L. B. Bate, 1st Lt., Sacramento, Calif.; Richard E. Geisler, Captain, Medford, Oregon; John Kenneth Allen, 1st Lt., Ft. Snelling, Minn. (Appointed 1st Lt. in Regular Army).

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Letter Received by the State Veterinarian of Missouri

I would like to call to your attention, an incident that happened this afternoon.

In a speech before the teachers of the county, in convention, Mr. Adams of the State Department of Public Schools, held up the veterinary profession in an extremely unfavorable way. In discussing the low wages of teachers he made the statement that if their pay was doubled it would still be much less than the poorest "horse doctor or mule doctor" in the country.

I would like to express extreme resentment for this utterance. I thoroughly resent the action of a man on the state pay roll coming into the county and holding up to ridicule the work of persons with whom he has not the slightest acquaintance.

Mr. Adams may be carrying this comparison and ridicule over the state and I believe a protest should be filed with his superior.—B. I. R., Versailles, Mo.

Mr. R— is not a veterinarian, but apparently a believer in fair play.

Danes Use Margarine

Margarine manufacture in Denmark is a leader among the margarine industries of the world, there being 117 factories in operation in this state-controlled industry, producing 78,199 tons of margarine. Per capita consumption of margarine in Denmark is 46.3 lbs., the greatest of any country of the world. Animal oils comprise 27 per cent of the raw materials used. It is pointed out by the assistant American trade commissioner in Denmark that the first margarine factory there met with much opposition from dairy interests, but it was soon realized that the more margarine was consumed the more butter was released for export. Cost is lower than that of butter, and the product is used extensively by workers and by the rural population. Per capita consumption of butter is approximately 20.7 lbs., less than half that of margarine.—*The National Provisioner.*

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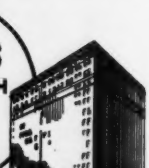

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Medical Men Near Cure for Pellagra, Scourge of South

The medical profession stood today upon the threshhold of a cure for pellagra, a disease which afflicts more than a million people in various parts of the world. The disease is particularly widespread in the southern part of the United States.

The S. M. A. Corp. of Cleveland announced today that it had solved the technical problems of large-scale production of a drug which medical men believe will prove the desired remedy.

The drug in question is nicotinic acid. It has already been demonstrated to be a cure for a disease of dogs known as "blacktongue." This disease is believed to be similar to, if not actually identical with, pellagra in human beings.

The probability that nicotinic acid will turn out to be the much needed cure for pellagra is set forth in an editorial in the current issue of the Journal of the American Medical Association.

The first announcement that nicotinic acid cured blacktongue came this week from the Department of Agricultural Chemistry at the University of Wisconsin. The experimental work was done by Doctors C. A. Elvehjem, R. J. Madden, F. M. Strong and D. W. Woolley.

Mr. W. O. Frohring, vice president and general manager of the S. M. A. corporation, revealed today that without knowledge of the experiments at the University of Wisconsin, similar experiments to treat dogs with blacktongue had been going forward in the laboratories of the S. M. A. Corp. and had proved equally successful.—David Dietz, *Scripps-Howard Science Editor.*

Missouri Meeting

The next Missouri Veterinary Short Course for graduate veterinarians, will be held at the State University, Columbia, Missouri. The dates tentatively set are January 25, 26 and 27, 1938. It is expected that Dr. O. V. Brumley, President of the A.V.M.A., will attend the conference.

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Mohler Commends New York for Success in Bovine-Tuberculosis Campaign

Courage to do the right thing regardless of consequences received special tribute from Dr. John R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture, in an address at Albany, N. Y., Nov. 4th. He was the concluding speaker in exercises commemorating the achievement of New York State in the practical eradication of bovine tuberculosis. He paid particular tribute to the cooperation of livestock owners, veterinarians, and other participants in the work for successfully conducting a project which many had declared to be visionary and futile.

"The veterinary workers who backed the movement," he said, "risked their professional judgment and prestige." Livestock owners likewise had much at stake in permitting strange inspectors to enter their premises and condemn cattle with a test that was also strange in most cases.

Declaring that the entire nation is proud of New York for its success in reducing tuberculosis infection in the cattle of the state from about 28% to less than 0.5%, the speaker mentioned still other benefits of the work. "It means renewed confidence," he said, "in our ability to organize and cooperate effectively in animal-disease projects regardless of their size, difficulty, or stubbornness of the opposition."

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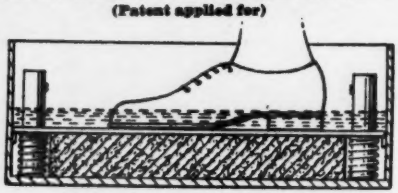

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Kansas Meeting

The annual meeting of the Kansas Veterinary Medical Association will be held in Topeka, January 19-20, 1938, with headquarters at the Jayhawk Hotel. For further particulars regarding the meeting and the program, address Dr. Chas. W. Bower, Topeka, secretary.

Illinois Meeting

The next meeting of the Illnois State Veterinary Medical Association will be held February 17-18, 1938 in Springfield. For further particulars address the secretary, C. C. Hastings, Williamsville, or W. B. Holmes, chairman, Arrangements and Entertainment Committee, Springfield.

Promotion for a Good Secretary

John J. Strandberg, Belle Plaine, secretary of the Eastern Iowa Veterinary Association for the past several years, was elected president at its 24th annual meeting in Cedar Rapids, October 12-13. John B. Gingery, Muscatine, was elected vice president; H. E. Tyner, New London, secretary; S. G. Paul, Clarence, treasurer, and J. H. Krichel, Keokuk and A. R. Stephenson, Bennett, trustees.

More than 200 veterinarians attended the meeting; wives and other visitors increased the attendance to more than 300. Many professional problems were discussed, equine encephalomyelitis ranking first in the time occupied, and interest elicited.

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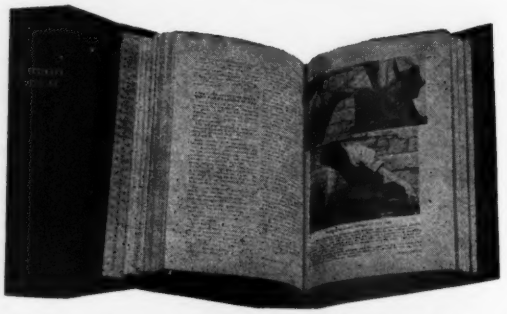

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James R. Ketchersid, K. S. C., '37, is associated in veterinary practice with Dr. Chas. W. Bower, Topeka, Kansas.

R. C. Hutchings has sold his practice at Dallas, Texas to S. A. Pittman. Doctor Hutchings has been in the B. A. I. and will continue in that line of veterinary work, his present headquarters being at Los Angeles, Calif.

May 2, 1937, Virgil A. Yount (Colo. '35) and Miss Mitzy Hart, Durant, Okla., were married. Doctor and Mrs. Yount reside at Kansas City, Kansas, Doctor Yount having been transferred from TB eradication work in Oklahoma, to meat inspection work in the Wilson plant.

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Expect Less Rapid Decline in Horse and Mule Numbers

A continued but less rapid decline in number of horses and mules on farms is reported today by the Bureau of Agricultural Economics in its annual outlook report issued Nov. 8.

The Bureau predicts that the long continued downward trend in the number of horses and mules will probably continue until 1940 or 1942 when it is expected that the number of colts raised will be equal to the disappearance of older animals from farms.

On January 1 last there were 16,130,000 horses and mules on farms, or the smallest number since 1889. There was a sharp decrease during the 1920's; a more gradual decrease in the last few years.

The Bureau pointed out that "since it is probable that the need for motive power will not expand greatly, the number of horses and mules of working age now may represent the maximum number needed."

G. Lames died at his home in Dysart, Iowa, after an illness of only a few days. He had been in poor health for five years. Doctor Lames was graduated from the Chicago Veterinary College in 1891 and moved to Dysart in 1894. He had practiced there continuously for 41 years. He is survived by his widow and a son, Dr. H. S. Lames, who was associated with him in practice.

Glen G. Seney, 38, Iowa Falls, Iowa, died August 19th after a short illness. Doctor Seney was graduated from the Iowa State College in 1933. At the time of his death, he was employed as assistant to Dr. W. L. Evers of Iowa Falls. He is survived by his widow, a son, his mother and a sister.

CONTROL
Bovine Pulmonary Edema
WITH
Kinsley's Mixed Bacterin Bovine
(A symbiotically prepared product)

Practitioners in the Corn Belt area are reporting the occurrence of hemorrhagic septicemia and pulmonary edema in cattle. These maladies are not only occurring in shipped in cattle, but also in native cattle.

The symptoms of uncomplicated hemorrhagic septicemia is common knowledge. The symptoms of bovine pulmonary edema are labored breathing, cough and marked depression and when complicated with hemorrhagic septicemia, there will be a rise of temperature. Pulmonary oedema is characterized in the uncomplicated early stages by edema of the lung. As the disease process continues there may be necrosis and abscess formation.

A diphtheroid microorganism associated with pulmonary edema was identified in the Kinsley Laboratories in 1927, and it has been found that a bacterin that is properly prepared from diphtheroid cultures is of value in controlling pulmonary edema.

Because of the frequent complications of hemorrhagic septicemia and pulmonary edema, the microbes causing both conditions have been combined and are grown symbiotically, thus the Kinsley Mixed Bacterin Bovine is a symbiotically prepared product and not an ordinary mixture.

The frequent repeat orders from practitioners for Kinsley's symbiotically prepared Mixed Bacterin Bovine is indicative of the value of this product. This bacterin has stood the test of time and is an outstanding product.

Price is regular and the usual discounts are given.

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of the horse or cow, and, also, in smaller animals, the use of

Antiphlogistine

applied comfortably hot helps to allay the catarrhal conditions and, hence, to check the cough.

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Fistone has also made possible the profitable treatment of chronic cases of fistulous withers that were impossible to handle surgically for economic reasons.

Convincing proof of its merit is its imitations. Fistone is regularly employed by veterinarians in every state in the union, in Canada and England.

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Loss in Garbage Fed Swine

A study was made of a heavy loss in young pigs, which occurred during an unusually severe winter at a large garbage-feeding ranch in Southern California. It was feared by the ranch management that the losses might be due to hog cholera resulting from so-called "breaks" in immunity following serum-simultaneous inoculation.

Filtration experiments and bacteriological studies were carried out, which showed that the mortality was not connected with a loss of immunity against cholera, but was due chiefly to infection with *Salmonella suipestifer*, which was the apparent cause of pneumonia as well as of enteritis.

The factors chiefly responsible for the loss were a lowering of resistance resulting from inadequate protection and insufficient bedding during unusually cold and wet weather. Recent vaccination and confinement in contaminated lots were also contributory factors.

Attention was especially directed to the finding of *Salmonella suipestifer* in pure culture in the lungs of more than fifty per cent of the pigs which exhibited lesions of pneumonia, as a review of the literature reveals few published cases in which this organism has been connected with pneumonia in swine.—*C. N. McBryde.*

DEAD HOGS ?...OR

Choice Hogs?

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F. L. DeWolf, 75, San Bernadino, Calif., died September 13th. Doctor DeWolfe was an inspector in the Federal B. A. I. until his retirement five years ago, since when he has been engaged in food inspection for the State of California.

Ten References on Mastitis

1. Sven Wall—Mastitis of The Dairy Cow.
2. Udall—The Practice of Veterinary Medicine.
3. Manual of Instructions for Veterinarians Engaged in Making Physical Examinations of Dairy Herds. (New York State Department of Health, Albany, N. Y.)
4. Michigan Technical Bulletin 110—A Contribution to Bacteriology and Pathology of the Bovine Udder.
5. Udall & Johnson, Bulletin 579, Cornell University Experiment Station, Ithaca, N. Y.
6. Storrs, Connecticut, Experiment Station, Series on Bovine Mastitis.
7. Kentucky Experiment Station, Lexington, Kentucky, Bulletin 338—Streptococci.
8. Journal of A. V. M. A., April 1933, Biological and Bacteriological Study of Bovine Mastitis by Rosell and Miller.
9. Wisconsin Experiment Station, series of releases by F. B. Hadley on Bovine Mastitis.
10. United States Department of Agriculture, Circular No. 400,—A Simple Method for Detecting Mastitis Streptococci in Milk.

Kansas City. ASHE LOCKHART.

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Pharmaceutical Laboratories

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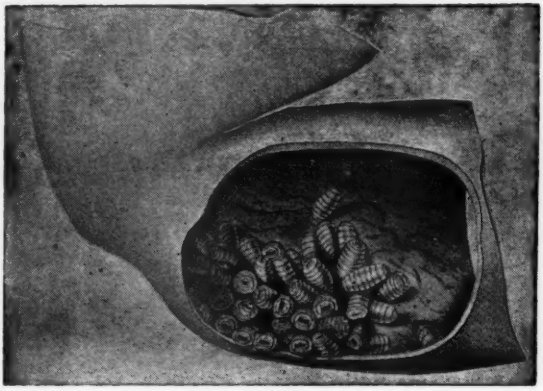
The annual drive against bots is a sanitary project that should be carried on until the bot fly has become a rare insect, or entirely destroyed.



The larvae of the bot fly ulcerate, perforate, and tumefy all three layers of the stomach (Petersen, 1929). They reduce horse power by stealth unknown in the dogma of the past.

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